Vol. 144, No. 2 February, 1936 Price 25c

AMERICAN GAS JOURNAL

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REYNOLDS build a Regulator for every type of gas control installation. Proved by records of performance in actual operation, or by records of factory tests on new developments, every **Reynolds** unit—whether for high pressure or low—is a **proved product.**

Long life, efficient operation, accurate regulation, reasonable cost, low upkeep—these are the vitally important inherent features built into **Reynolds Gas Regulators** through the 40 and more years of experience in developing, designing, building and testing gas control equipment.

For full co-operation of our Engineering Department, write our factory, branch offices or representatives.

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REPRESENTATIVES: Eastern Appliance Company, Boston, Mass.
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ANDERSON, INDIANA, U.S.A.

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fully adjustable BELL JOINT

CLAMPS

It costs less to reduce unaccounted-for gas when you install **EMCO Clamps** on the bell and spigot joints of your distribution system.

The fully adjustable, sectional construction of **EMCO Clamps** greatly reduces installation costs.

The scientific design of this clamp, which results in two directional clamping action, radial against spigot and longitudinal against bell, seals the oversize gasket bond-tight, preventing further leakage and eliminating all maintenance cost.

Reduce your unaccounted-for gas through clamping—keep installation costs at a minimum and protect your investment—install **EMCOs**, the modern, fully adjustable Bell Joint Clamps.

PITTSBURGH EQUITABLE METER CO.

MERCO NORDSTROM VALVE CO.

MAIN OFFICES PITTSBURGH, PA.

ATLANTA BUFFALO CHICAGO MEMPHIS
NEW YORK COLUMBIA KANSAS CITY PHILADELPHIA TULSA HOUSTON LOS ANGELES OAKLAND

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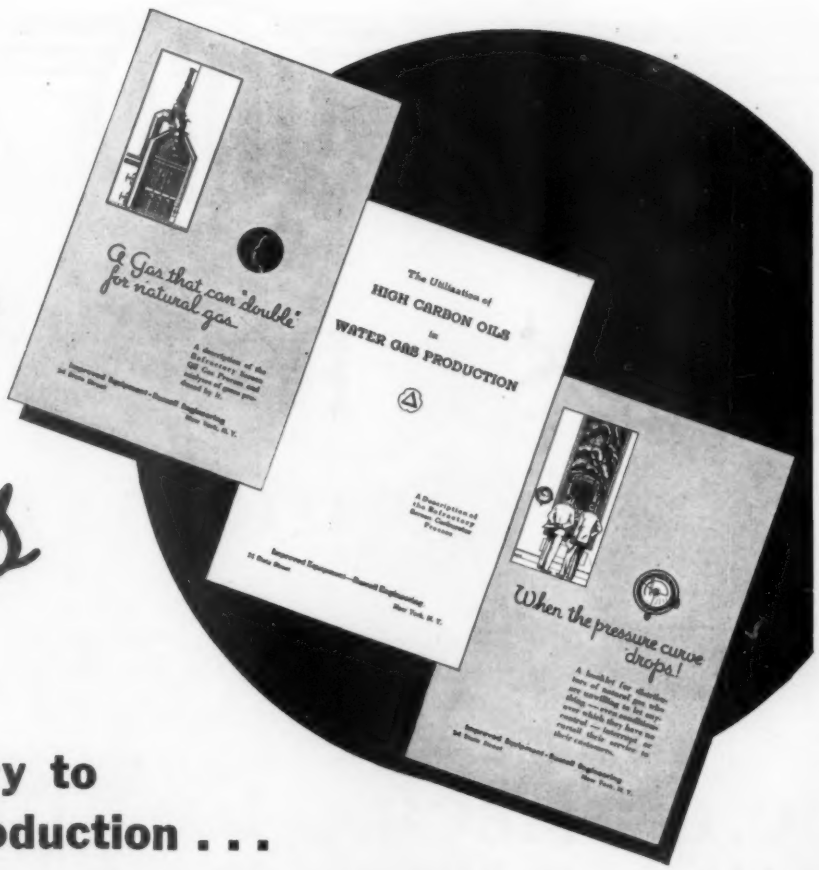
A Proven Success



From Laboratory to Commercial Production . . .

THE REFRACTORY SCREEN PROCESS

FOR MANUFACTURED GAS — The Refractory Screen Carburetor Process in actual commercial operation has demonstrated its ability to meet today's demand for the processing of low cost fuels in the manufacture of 500-550 Btu carburetted water gas. The Process utilizes high carbon or Bunker "C" oil and solid fuel for generation requirements, the proportions of which can be varied to take advantage of fuel price fluctuations. This makes possible a decrease in gas production cost sufficient to amortize the conversion cost in an unusually short period of time.

FOR NATURAL GAS—The Refractory Screen Oil-Gas Process, which uses oil only for generation, has been commercially installed in carburetted water gas sets, producing at high capacity, a satisfactory substitute for natural gas at a cost below its usual sales price. The process requires only the usual operators and can be started quickly from cold position. It has been proven a practical and satisfactory answer to the problem of peak load and standby service for natural gas situations.

Let us send you these booklets—just drop us a post card.

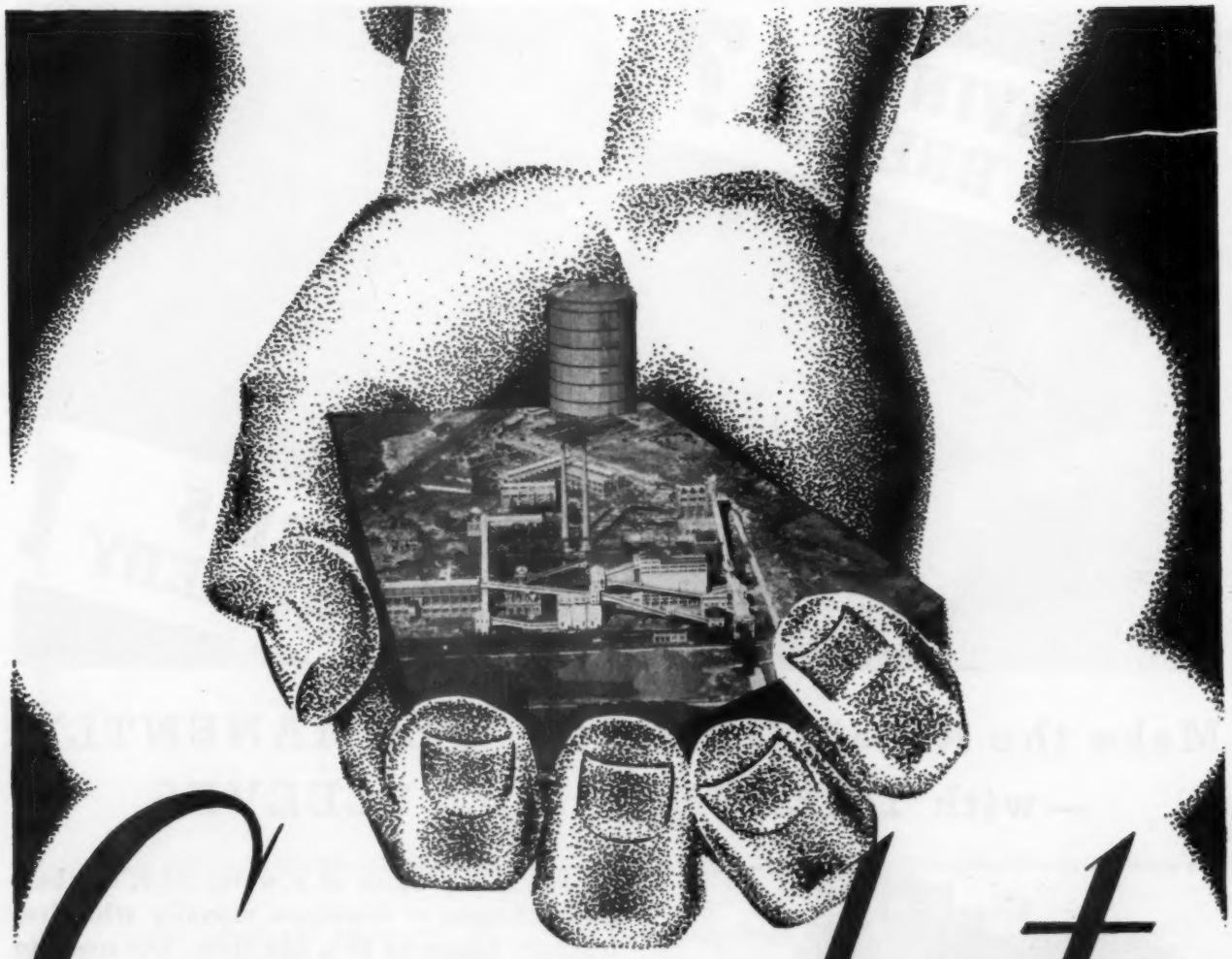
IMPROVED EQUIPMENT-RUSSELL ENGINEERING

DIVISION OF

Combustion Utilities Corporation

24 State Street **New York, N. Y.**

MAXIMUM RETURN TO CLIENTS PER DOLLAR EXPENDED

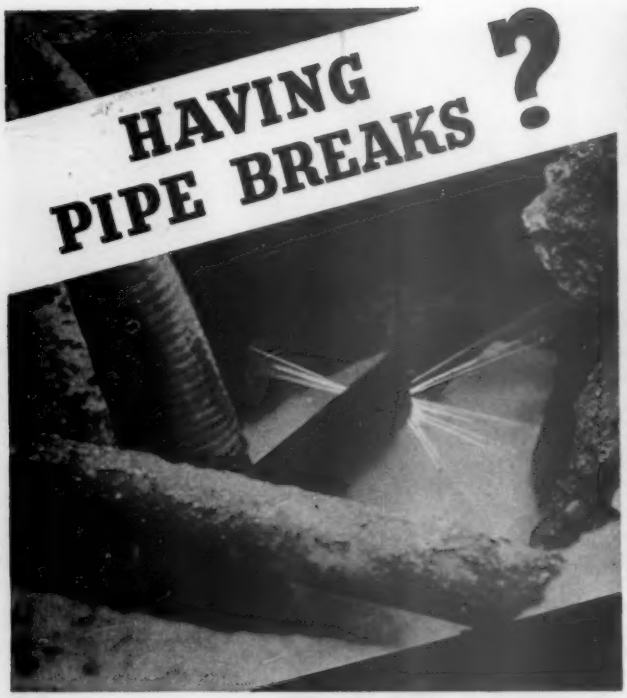


Complete

FROM DESIGN to construction . . . the Bartlett Hayward Company is preeminently qualified to build complete gas plants of any size. Their engineers have a wealth of experience gained while building plants in all parts of the country—including the largest in the nation as well as over sixty per cent of the gas holder capacity in the United States. This experience is offered to anyone who is contemplating construction, enlargement or modernization. Consultation with Bartlett Hayward engineers from the inception of your plans will save expense and insure every unit being built in accordance with the most advanced practice known to the industry.

THE BARTLETT HAYWARD COMPANY

BALTIMORE, MARYLAND



Make the Repair QUICKLY! PERMANENTLY! —with DRESSER SPLIT SLEEVES

TOP — Dresser Cast Split Sleeve, Style 57. Sizes 2" to 12" inclusive. For packing off a section of cast-iron pipe 8" long.

CENTER—Multiple installations of Style 57 can be adapted for almost any length of break.

BOTTOM — Don't forget Dresser Cast Split Sleeves, Style 26 (sizes 3" to 24" inclusive) for enclosing broken bells.

Above is a picture of a water line, deliberately chosen to illustrate visually what frequently happens to a gas line. No need to let such a break cripple or interrupt your service. Ordinary workmen can make the repair easily, positively, and permanently—in a very *few minutes!* Just give them a Dresser Split Sleeve to enclose the break, and a wrench to tighten the bolts.

The Dresser *rubber pack* makes an instantly effective and lasting seal; it also provides the continuous flexibility needed at the point where the pipe failed. Put the Sleeve on and *leave* it on—for good!

You can avoid unnecessary service interruptions this winter—and the high cost of makeshift repairs—by using the Dresser method of repairing broken pipe and bells. Style 57 repairs cast-iron pipe; and Style 73 is for steel pipe. Write for Folder No. 57.

S. R. DRESSER MANUFACTURING CO. • BRADFORD, PA.

In Canada: Dresser Mfg. Company, Ltd., 32 Front St., W., Toronto, Ont.

KEEP A DRESSER SLEEVE ON HAND FOR QUICK REPAIRS

MARCH TO *LEADERSHIP* WITH GAS REFRIGERATION IN 1936

USES NO WATER

Here are three powerful allies: (1) An acceptance of gas refrigeration that is continually mounting, (2) a gas refrigerator that's more sales-inviting than ever, (3) the advertising support of the greatest campaign in gas refrigeration history.

1936 is *not* just another year for those companies that are planning to make gas refrigeration the spearhead of their sales and merchandising programs. It is a year of unparalleled opportunity.

We, of Electrolux, recognize with a deep sense of gratitude the splendid work the gas industry has done and is doing to promote the acceptance of gas refrigeration throughout America. During the past nine years, each year has seen a wider and more enthusiastic public response to gas refrigeration . . . each year, a larger percentage of all refrigerator sales in this country have been *gas* refrigerator sales.

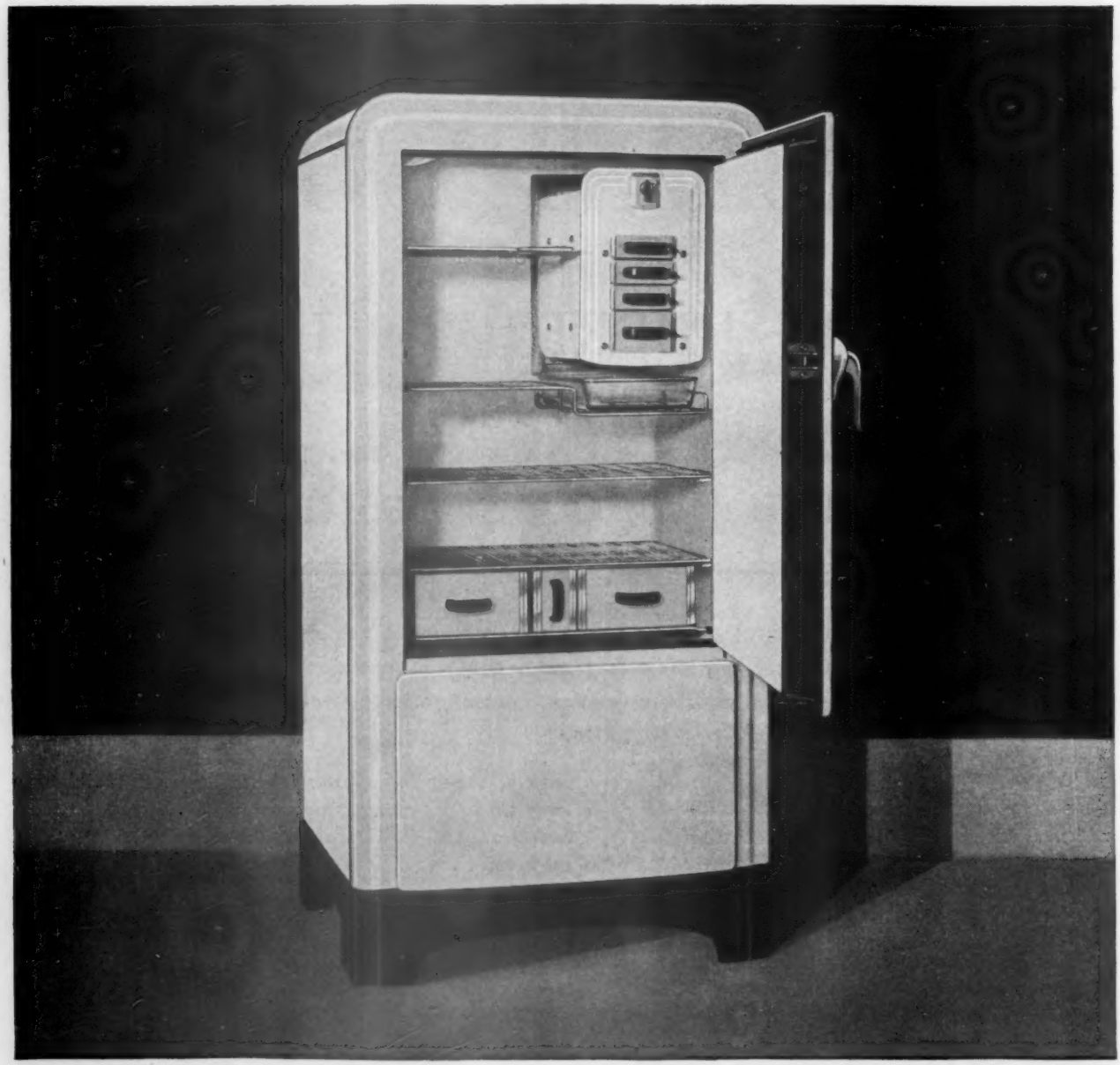
Yet, to achieve the promise which 1936 holds for gas refrigeration, the activities of each *individual* gas company must be accelerated. Worthy of emulation as well as praise, are those gas companies which through aggressive effort last year put the gas refrigerator in *first place* for popularity and sales in their territory.

Today, the impetus of an ever-increasing acceptance of gas refrigeration—plus the sales advantages of an even more beautiful Electrolux and the support of powerful national advertising—offer you a not-to-be-missed opportunity. March to Leadership with Gas Refrigeration in *your* community during 1936.

New Air-Cooled **ELECTROLUX**
THE SERVEL *Gas Refrigerator*

TURN TO THE NEXT FOUR PAGES FOR THE WHOLE STORY OF THE NEW 1936 GAS REFRIGERATOR AND THE ADVERTISING CAMPAIGN BEHIND IT

NOW *an* ELECTROLUX



SIMPLIFIED . . . ORGANIZED . . . BEAUTIFIED

Neither time, money nor effort has been spared to make the interior of Electrolux as attractive and sales-inviting as the exterior.

Handles and trim are of gleaming Bakelite. Tray fronts, too, have been given a beauty treatment . . . provide smart contrast with their satiny finish.

And the new 1936 Electrolux has been simplified and organized throughout. There's a place for everything, but nothing to interfere with the free circulation of air.

On the opposite page are shown five of the many new and improved features in the 1936 Electrolux.

as beautiful inside as outside

The 1936 model matches the famous Electrolux beauty of cabinet design with a new eye-appealing, buy-appealing interior

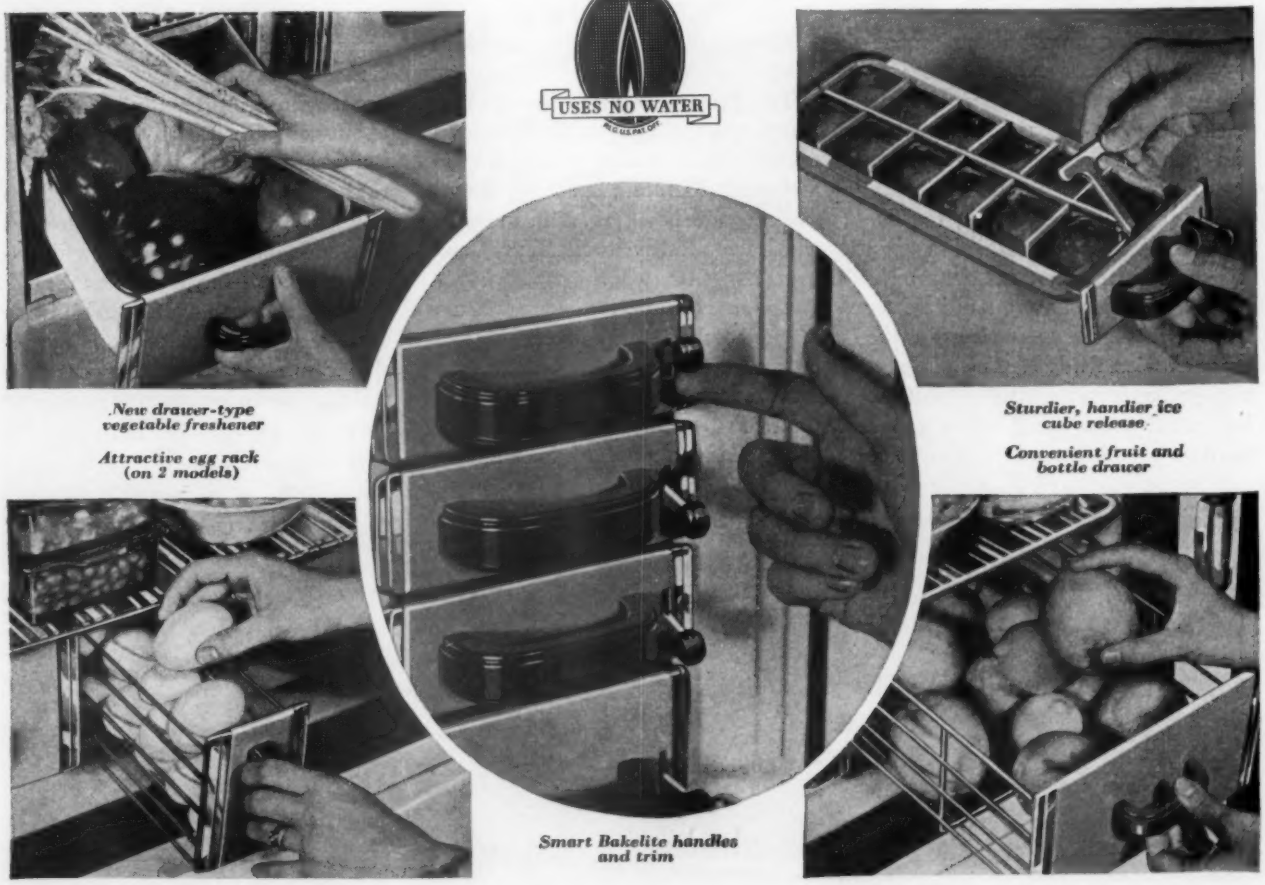
ELECTROLUX for 1936 enables you to offer your customers a gas refrigerator that has been *proved* by the past . . . a gas refrigerator that has been *improved* for the future.

You have only to open the door of the beautiful new model to realize how much has been done to make the Electrolux refrigerator which received such overwhelming acceptance in 1935 *still better* for the new year.

The whole interior has been simplified . . . organized . . . beautified. It's trim and efficient. There's plenty of snap, dash, eye-appeal. The new 1936 Electrolux has the kind of interior every woman wants. It offers *every convenience*, but no dirt-trapping, time-wasting knick-knacks.

Women will delight in the orderly, well-arranged shelves and handy basket-type drawers and racks in Electrolux that lighten kitchen work and bring more leisure hours. And they'll be glad to note how only an occasional rub with a damp cloth will keep it spotless and sanitary . . . keep it glistening and beautiful.

All this means sales—extra sales—for gas refrigeration. And it means valuable assistance for you in your March to Leadership with Gas Refrigeration in 1936!



New drawer-type vegetable freshener

Attractive egg rack (on 2 models)

Sturdier, handier ice cube release

Convenient fruit and bottle drawer

Smart Bakelite handles and trim

And supporting your refrigeration sales activity in 1936...

THIS GREATEST ADVERTISING CAMPAIGN IN ELECTROLUX HISTORY

More **Magazines . . . *More* Pages . . . *More* Readers! This year, Electrolux advertising will carry the dramatic story of gas refrigeration to more than 17,000,000 American families monthly, as well as to the country's leading builders, architects and real estate operators.**

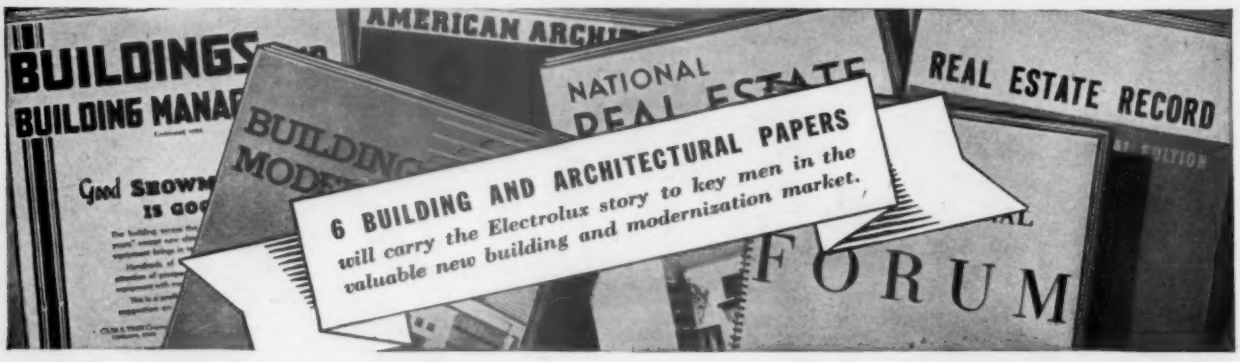
NINE POWERFUL national magazines—each a home favorite, each reaching a valuable market for Electrolux—will be used this year in the greatest advertising campaign ever run on gas refrigeration.

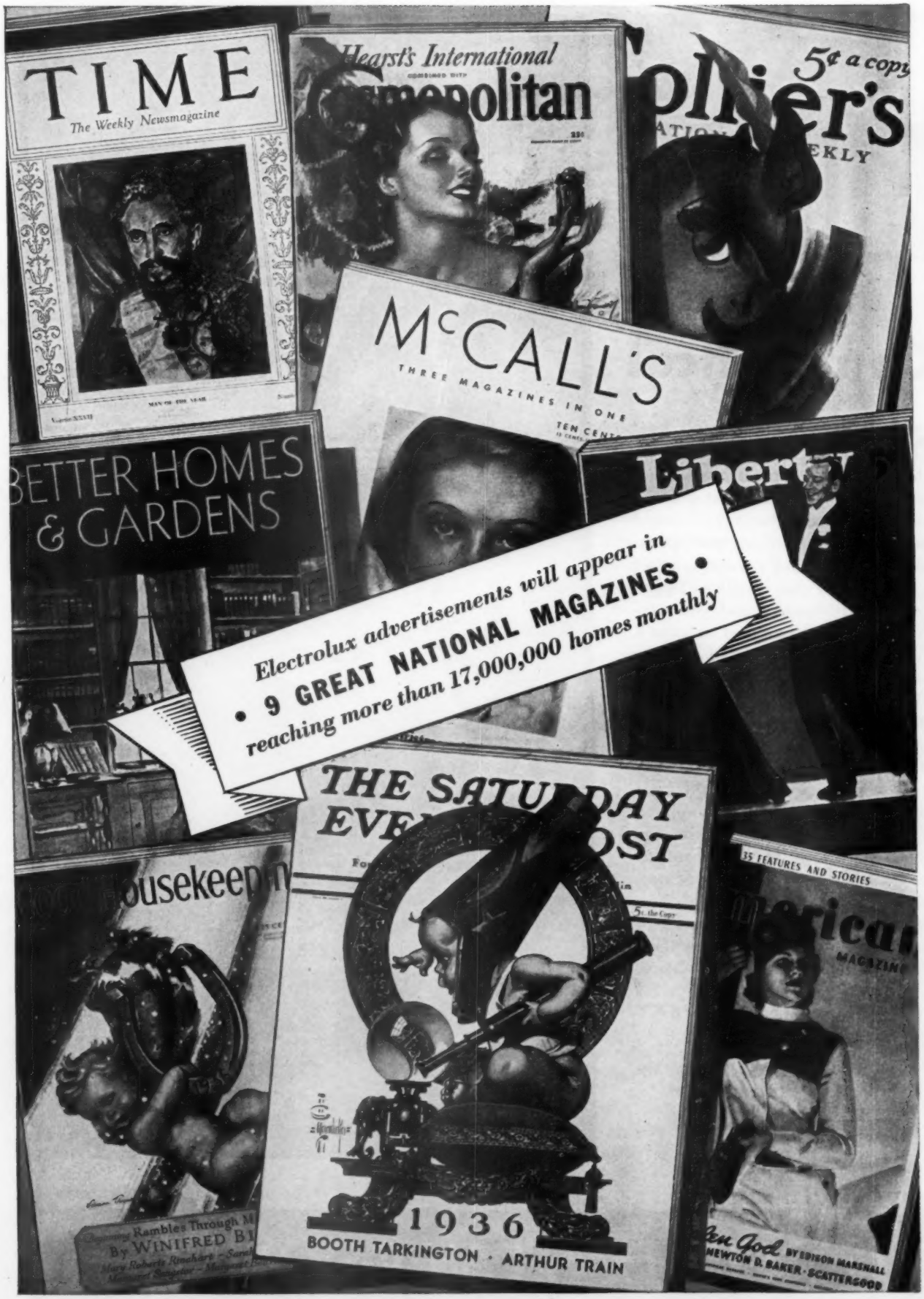
The complete list includes The Saturday Evening Post, Collier's and Liberty—three major national weeklies; Good Housekeeping and Better Homes & Gardens—leaders in the home service field; McCall's Magazine—a big favorite with women; the influential news weekly—Time; and the two prominent fiction monthlies—Cosmopolitan and the American Magazine.

Together, these magazines go into more than 17,000,000 American homes. They insure a nation-wide audience of families in *all* the worthwhile income brackets . . . an audience which includes the *whole* family, husband as well as wife.

And, in addition to the great home magazines, Electrolux advertising will be carried this year in six outstanding building and architectural publications. Today, building construction and modernization work is definitely increasing. And the Electrolux advertisements in these publications will assist you in presenting the facts about gas refrigeration to the owners, builders, architects, management and real estate operators—in fact, to everyone who has anything to do with wholesale operations and new development work—in your community.

In your March to Leadership with Gas Refrigeration in 1936, this aggressive Electrolux advertising program will provide an important supplement to your own vigorous gas refrigeration sales activities.




TIME
The Weekly Newsmagazine
Hearst's International
Cosmopolitan
5¢ a copy
McCALL'S
THREE MAGAZINES IN ONE
BETTER HOMES & GARDENS
Liberty
Electrolux advertisements will appear in
• 9 GREAT NATIONAL MAGAZINES •
reaching more than 17,000,000 homes monthly
THE SATURDAY EVENING POST
1936
BOOTH TARKINGTON · ARTHUR TRAIN
35 FEATURES AND STORIES

BURIED with Confidence!

SEE this length of NATIONAL Steel Pipe going into its rocky bed. Those responsible for its installation have confidence that its great strength and high degree of ductility will stand the strains of modern service—vibration, cave-ins, trench pressure, shocks . . . confidence that it will withstand washouts, settlements and other external factors encountered in today's more rigid requirements of pipe for gas service.

Gas Companies the country over are more and more showing their confidence in NATIONAL Steel Pipe. They know that in NATIONAL they obtain a product which has the most advanced design and methods applied to it by an organization with the widest experience in pipe problems . . . the largest manufacturer of steel tubular products in the world. You have available their research and field staffs. Call on these men at any time. Write or wire any District Sales Office.

NATIONAL TUBE COMPANY
Pittsburgh, Pa.
Pacific Coast Distributors: Columbia Steel Co., San Francisco
Export Distributors: United States Steel Products Co., New York
United States Steel Corporation Subsidiaries

UNITED STATES STEEL

VOLUME 143,
NUMBER 2

AMERICAN GAS JOURNAL

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NUMBER 3746

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FEBRUARY, 1936

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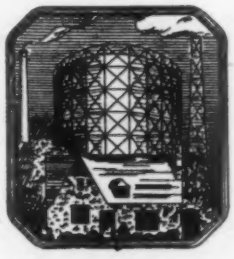

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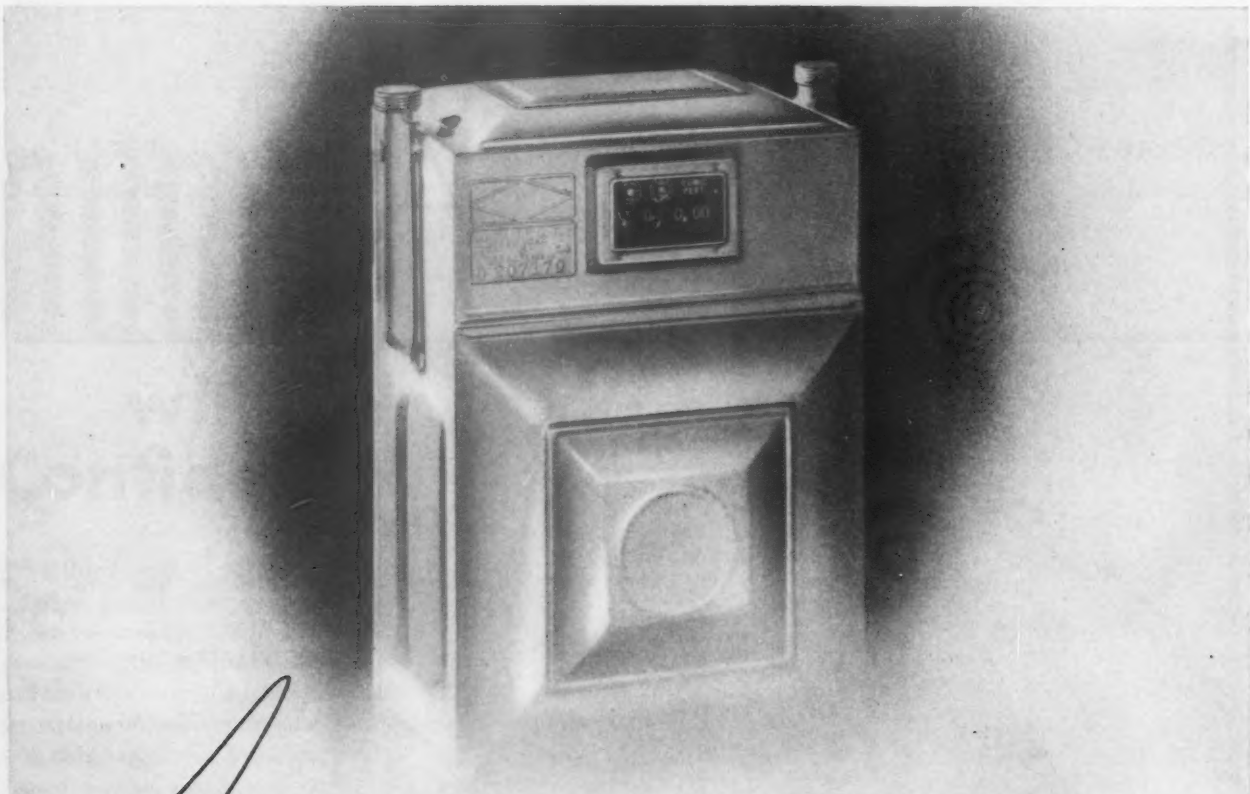

Accuracy

" . . . . it represents our base point of reference in considering meter performance. The meter stands as sole arbiter of the customer's and company's interests. Accurate equipment imposes a fair charge on the customer and yields a corresponding revenue to the company. In the event of a dispute, correct meter registration is a most effective agent in the hands of the company. The meter continuously resides on the customer's premises, and monthly it touches his pocketbook. In the fullest sense it is the outpost of public relations."

From "Factors and Trends in Meter Maintenance", a paper presented before the A. G. A. Distribution Conference at Cleveland, Ohio, May 2-4, 1935.

AMERICAN METER COMPANY
INCORPORATED
Measurement and control of Gas, Oil, Steam, Air and Liquids
GENERAL OFFICES: 60 EAST 42nd STREET, NEW YORK, N.Y.

AMERICAN METER CO. MEASUREMENT ENGINEERS
CENTENNIAL
1836-1936

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FEBRUARY 1936

AMERICAN GAS JOURNAL

VOLUME 144 No. 2

What About the Collection Department Records and Procedure?

H. J. Johnson

Manager Public Utilities Sales Div., Remington Rand, Inc., Buffalo, N. Y.

THE Collection Department Records and Procedure are among the most important in the entire customer bookkeeping system. The records must be both simple and complete. The procedure must insure proper follow-up of all delinquent accounts. The collection effort should be completed prior to the next meter reading date because if the collector calls either immediately before or after the delivery of the new bill to collect the delinquent amount, the customer feels that he has discharged his responsibility for another thirty days. It is particularly important that all unkept promises be followed up immediately upon expiration of the promised date because otherwise future promises will be made without any serious regard for fulfillment.

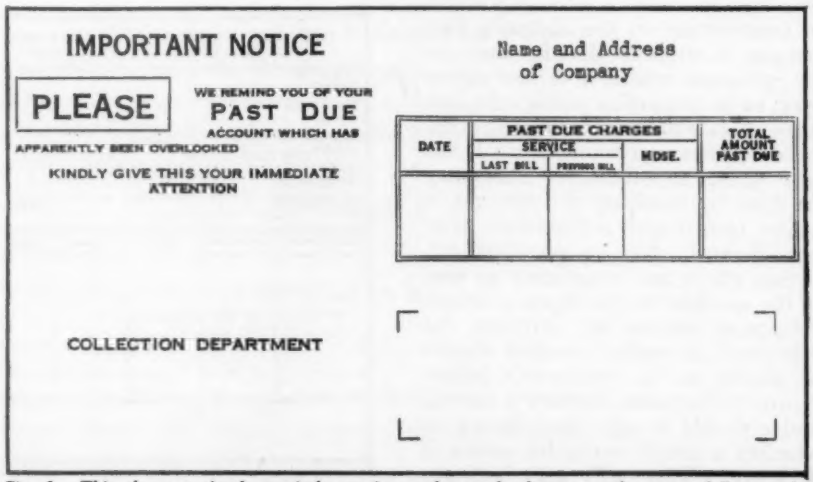
Should Collection Stubs Be Used?

A great deal of attention has been given to the use of the collection stub, that is an additional stub attached to the ledger stub, to be used for collection follow-up purposes on all accounts that remain unpaid after a specified date. The stubs which are detached from all unpaid accounts are turned over to the Collection Department to be used for collection follow-up activities. It becomes necessary, however, for the Collection Department to prepare a delinquent notice or a cut-off notice to the customer, and if the collector is to make a personal call another form must be written for this purpose, and very frequently still another one is prepared in connection with all actual cut-offs. In addition to this, it becomes necessary for the collector to prepare a receipt for the customer and a cashier's stub to be turned in with the remittance.

The use of the collection stub represents a certain element of unnecessary waste due to the fact that 75% or more of them are destroyed. The loss is represented by the cost of the additional paper stock that is used, the additional address printing time and the repeat printing operations required by the billing machine. In addition to this, it involves a 100% increase in the housing space required for the current ledger record. If the delinquent notice and the various supporting records are written directly from the customer's ledger record this waste may be entirely eliminated and the amount of typing effort remains identically the same with or without the collection stub.

Preparing the Delinquent Notice

It is important that the deliquent notice show the charge for the current month separate from previous arrears in order that a comparison of the two amounts may be made for the purpose of aging the account. The merchandise charges should also be entered on the delinquent notice because practically every customer who makes a remittance after receiving the notice will include any merchandise charges which may be


IMPORTANT NOTICE

PLEASE

WE REMIND YOU OF YOUR PAST DUE ACCOUNT WHICH HAS APPARENTLY BEEN OVERLOOKED

KINDLY GIVE THIS YOUR IMMEDIATE ATTENTION

COLLECTION DEPARTMENT

Name and Address of Company

DATE	PAST DUE CHARGES			TOTAL AMOUNT PAST DUE
	SERVICE		MDSE.	
	LAST BILL	PREVIOUS BILL		

Fig. 1. This shows a simple reminder notice to be used where no subsequent follow-up is to be made.

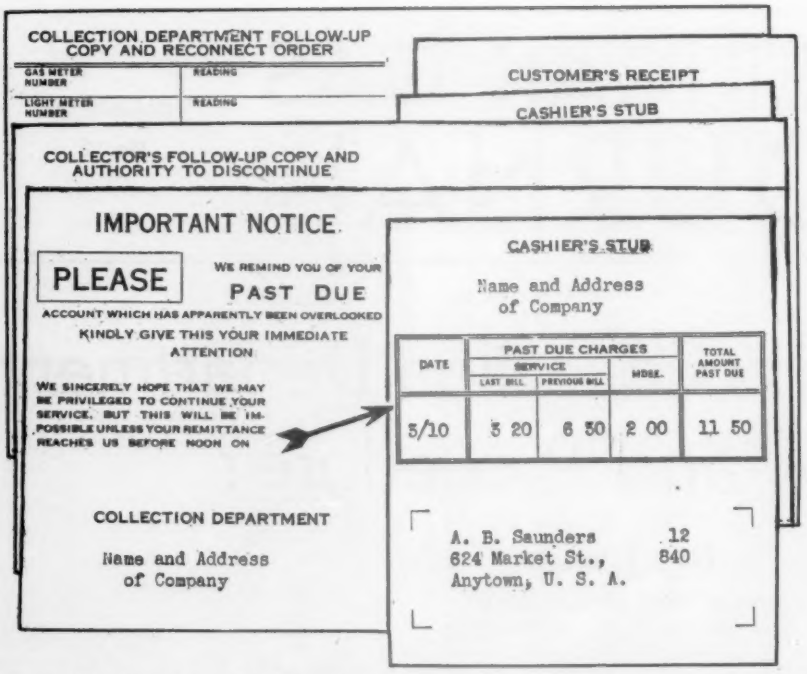


Fig. 2. This shows the complete six part form. This may be printed in continuous strips for use on fanfold machines or may be printed in strips and carbonized for use on regular typewriters. In either event the forms are continuous at the sides for convenience in handling and filing.

due, whereas if the merchandise notice is entirely separate the service account will be paid and the merchandise balance conveniently forgotten. If it is necessary for the collector to make a personal call he should make an effort to collect the merchandise balance even though it does not enter into the decision as to whether service should or should not be cut off for non-payment of the bill. This will effect a substantial reduction in collection expense.

Selective Collection Effort

It is very important that all collection work be handled on a selective basis in order to make it possible to concentrate on the accounts that require it without wasting time on the accounts where it is not necessary, or to jeopardize public relations through collection activities with customers whose previous record has been quite satisfactory. This may be done by checking the customer's ledger record with a Customer History Record, showing previous collection effort and experience as well as the amount of the deposit, before delinquent notices are written. As this check is made a symbol should be placed on the customer's ledger record to indicate whether a cut-off notice should be sent immediately or whether a simple reminder notice is sufficient. This will also indicate whether or not subsequent personal collection calls are necessary.

The Collection Message

The wording and general appearance of the notice is particularly important. Very often the message is unnecessarily blunt and frequently entirely too apologetic. On many notices the wording contains an inference that the company records may be wrong which is certainly not a practical way to build customer good will or customer confidence in the operating methods and records of the company. The collection message shown on the notice in the illustration has been successfully used by a number of companies with most excellent results both from the standpoint of collection results and customer reactions.

Delinquent Reminders

The delinquent notice illustrated in Fig. 1, is simply a reminder of a past due bill and is used in connection with a delinquency for the current month only or in connection with such other accounts as do not require or should not receive any subsequent collection follow-up. Accounts of this kind may also be handled by merely attaching a colored sticker to the regular bill for the following month, which calls attention to the past due amount on the bill.

Cut-Off Notice

The cut-off notice illustrated in Fig. 2, shows a six part form which is written directly from the customer's ledger record and provides the notice to the customer with a cashier's stub attached, and all subsequent records and forms required for the entire collection procedure as described in subsequent paragraphs. These forms may be carbonized and used on a standard typewriter by smaller companies, or may be used in connection with fanfold and continuous form machines by the larger companies.

It has been found that a cashier's stub attached to the customer's notice results in a greater percentage of remittances because of the convenience afforded to the customer by being able to attach the stub to the remittance and mail it.

Continued on page 72

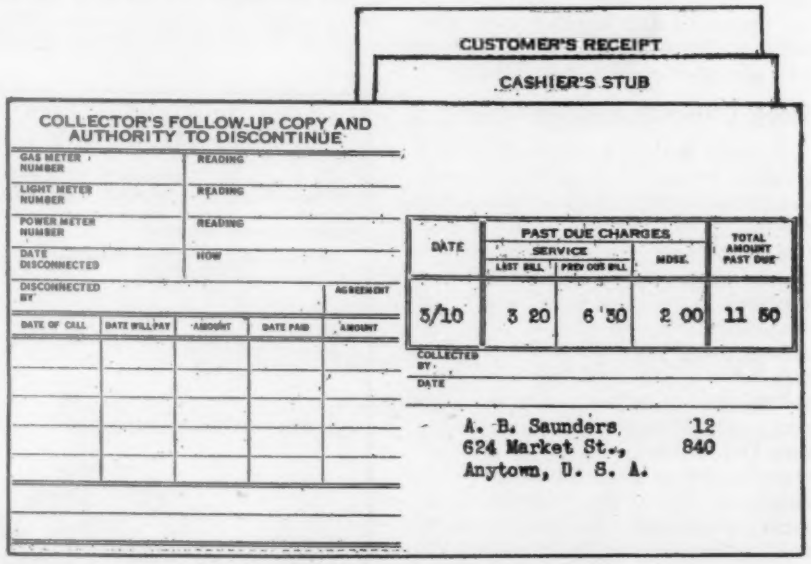


Fig. 3. This shows the set of forms assigned to the collector when personal calls are necessary. These forms are in one continuous strip.

Recent Developments In the Use of Copper Pipe for Gas Distribution*

F. A. Hough

Distribution Engineer
Southern Counties Gas Company of California

(Continued from January issue)

Economics of Copper Pipe Utilization

The economic factors involved in choosing between steel, cast iron or copper were discussed in the 1932 report. The only revisions to that discussion now required are due to changes in the price of copper or changes in our installation costs.

In general the material should be chosen that will give the lowest annual fixed charges, assuming of course that operating costs (cost of leakage, for example) are the same for all materials.

The ultimate life of copper pipe is not known, but judging from all the evidence we now have, must be very long. However, it is probably not wise to assume a life of more than 30 years. The future of all human affairs is too uncertain to justify looking further ahead than that.

Assuming then a life of 30 years for copper pipe and the following comparative prices of steel and copper pipe, it is possible to compute the life that a steel pipe will have to have to give annual fixed charges equal to those for copper pipe.

Cost data to be used in the economic calculations, based on current pipe prices and 1934 installation costs are shown in Table 1.

Conditions Under Which Copper Mains and Services Are Installed

The decision as to whether copper or steel pipe is to be installed in any given case is based upon the results of soil tests made with Shepard earth resistivity meters. These tests are made at pipe depth and at 50′ intervals along the routes of all proposed main extensions or replacements.

Soil tests are also made by service crews to determine in each case the type of service to be installed.

By means of these tests soils are divided into three classes, according to their electrical resistivity. See Table 2.

The limitation of 50 lb. per sq. in. maximum working pressure specified for copper mains and services has been adopted because we have found that under very high pressures, 400 lb. per sq. in. for example, copper tubes are corroded internally, presumably by traces of hydrogen sulfide in the natural gas. Fifty pounds was adopted arbitrarily and may be lower than necessary.

Construction Methods

A number of improvements in construction methods have been adopted since the publication of the 1932 paper. At that time we had discarded the brazing of copper pipe with Tobin bronze or similar materials containing large amounts of zinc because of the tendency of these materials to dezincify in some soils. We were making all joints with sleeve fittings and soft solder. These soft solder joints often proved defective because of poor workmanship. They were also considered unreliable because of the tendency of such solder to flow under continued stress and to crystallize over a long period of time.

We are now using sil-fos, a silver solder melting at 1300 degrees F. and

MAINS NOT UNDER PAVEMENT

	2″	3″
Installed cost of bare steel mains	.593	.829
Installed cost of steel mains protected with two coats coal-tar, 1 asbestos wrapper	.653	.909
Installed cost of steel mains protected with three coats coal-tar and two asbestos wrappers	.692	.939
Installed cost of copper mains	.825	1.021

ILLUSTRATIVE EXAMPLES

2″ copper (Installed cost $82.50 per 100 ft.)	
Interest .07 × $82.50 =	$5.78
Depreciation (6% sinking fund) .01265 × 82.50 =	1.04
Taxes .025 × 82.50 =	2.06
	$8.88
2″ steel—coated with 2 coats coal-tar and 1 asbestos wrapper—(Installed cost $65.30 per 100 ft.)	
Interest .07 × 65.3 =	$4.57
Taxes .025 × 65.3 =	1.63
	$6.20
Depreciation required to equate fixed charges— $\frac{2.68 \times 1000}{65.3}$ = $41/1000 = depreciation rate	2.68
	$8.88
If these mains are installed under pavement costing $.40 per foot to cut and replace, the fixed charges are:	
2″ copper (Installed cost $122.50 per 100 ft.)	
Interest .07 × 122.50 =	$8.57
Depreciation .01265 × 122.50 =	1.55
Taxes .025 × 122.50 =	3.06
	$13.18
2″ steel (Installed cost $105.30 per 100 ft.)	
Interest .07 × 1.053 =	$7.37
Taxes .025 × 1.053 =	2.63
	$10.00
Depreciation required to equate fixed charges— $\frac{3.18 \times 1000}{105.30}$ = $30.20/1000 = depreciation rate	3.18
	$13.18
Corresponding life (from tables = 18.6 years.	

TABLE I

* *Presented at the Pacific Coast Gas Association, September 17, 1935.*

Soil Class	Electrical Resistivity (Ohm./cm.)
I	2,000 or less
II	2,001 to 9,999
III	10,000 or over

The types of pipe and protective coating used in each soil class are given in the following table:

	Soil Class		
Services:	I	II	III
	0 to 2,000 Ohm cms.	2,001 to 9,999 Ohm cms.	10,000 and over Ohm cms.
(a) Working pressure 50 lb. per sq. in. or less	Copper or C-in-C	Copper or C-in-C	Bare steel or C-in-C
(b) Working pressure more than 50 lb. per sq. in.	HW steel	MW steel	Bare steel
Mains:			
3" in diameter and smaller:			
(a) Working pressure 50 lb. per sq. in. or less	Copper or C-in-C	MW steel or C-in-C	Bare steel or C-in-C
(b) Working pressure more than 50 lb. per sq. in.	HW steel	MW steel	Bare steel
4" in diameter and larger	HW steel or Cast iron	MW steel or Cast iron	Bare steel

Explanation of abbreviations:
C-in-C—Copper pipe installed in a conduit of old steel pipe.
MW steel—Steel pipe protected with coal-tar primer, two coats 180° m.p. coal-tar and an outside bonded wrapper of asbestos felt.
HW steel—Steel pipe protected with same coating as above to which one coat of coal-tar and a second wrapper of asbestos felt are added.

TABLE 2

containing 80% copper, 15% silver, and 5% phosphorus. This material has proven ideal for our purposes. Its melting point is low enough with respect to that of copper to permit the making of connections to live gas mains without danger of perforating the main. Its tensile strength is nearly as high as that of copper and the absence of zinc eliminates the dezincification problem. We believe that with this material we make joints that are as reliable and as long lived as the copper pipe itself.

Figures 1 to 8 inclusive show the types of fittings and joints used.

Figure 1 shows the type of joint used for connecting lengths of pipe. Coupons taken from a joint of this type failed when the stress in the tube was 32,500 lb. per sq. in. and the elongation in 2" was 25.5%. All failures occurred in the sil-fos metal, indicating that the joint is not as strong as the tubing. However, the elongation of 25.5% indicates that the joint is strong enough for our purposes.

Figure 2 illustrates a stronger type of joint which can be used for connecting lengths of pipe. One end of each length is belled by heating the copper to soften it and then driving in a tapered steel pin of the proper dimensions. The surfaces to be joined are then cleaned with steel wool, the spigot end is inserted in the bell and the joint is heated thoroughly with an acetylene torch. When the correct temperature is reached a sil-fos rod is applied around the end of the bell. Molten sil-fos is carried to all parts of the joint by capillary attraction. The clearance between the surfaces of the bell and spigot should be from .003" to .005" to insure satisfactory distribution of the sil-fos.

Figure 3 illustrates the connection used for connecting copper services to copper mains. All surfaces to be joined with sil-fos are first cleaned with steel wool. The stamped copper saddle is then securely clamped to the main in the manner shown in Figure 9. The saddle is then heated and sil-fos applied around the outer edge. The navy-bronze cast tee is then sil-fos soldered to the service pipe and to the saddle. The service is then pressure tested, after which the main is tapped in the conventional manner through the opening in the top of the tee with a tapping machine.

Figure 4 gives the details of a cast navy-bronze tee used to terminate copper mains. When it becomes necessary to extend a main, the plug in the top of the tee is removed and a rubber expansion plug is inserted and expanded. With the gas thus shut off the pinched end of pipe can be cut off 8 or 10" from the tee and the new extension connected. The 8 or 10" distance prevents the melting of the sil-fos joints at the tee. After the extension has been pressure tested, the rubber plug is removed and the bronze plug is replaced. Gas blows to the air during the insertion and removal of the rubber plug; however, no difficulties are encountered on 2" mains if the pressure does not exceed 20 lb. per sq. in., nor on 3" mains if the pressure does not exceed 10 lb. per sq. in.

Figures 5 & 6 show the fittings used to connect copper services to steel mains. Sil-fos cannot be used to connect copper to steel, therefore Tobin bronze or an equivalent brazing material is used. A protective coating is applied to the main, the service nipple and the copper service at these connections as a precaution against localized corrosion of steel within 2 or 3 inches of the connection and dezincification of the bronze.

Figure 7 illustrates the adapter used to connect copper tubing to standard pipe thread valves or fittings. These are used, for example, at the top of a service riser where connection is made to a service cock.

Figure 8 illustrates the type of elbow used. A variety of fittings of this type are on the market.

Conclusions

The conclusions in the 1932 report that still appear to be valid have been stated above. The following additional conclusions can now be drawn:

1. Copper pipe is a suitable material for submarine crossings and salt marsh installations, as well as for installations in corrosive soils. (A revision of conclusion No. 2 of 1932 report).

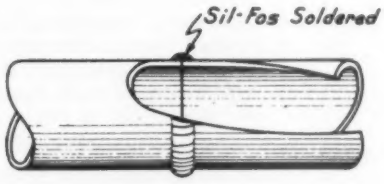
2. The accelerating effect of iron oxide on the corrosion of copper in soil is not serious enough under our field conditions to warrant the discontinuance of the practice of using old steel pipes for conduits where savings in stallation cost are effected by such use.

3. Sil-fos solder joints are more satisfactory for our purposes than soft solder joints. (A revision of conclusion No. 10 of 1932 report).

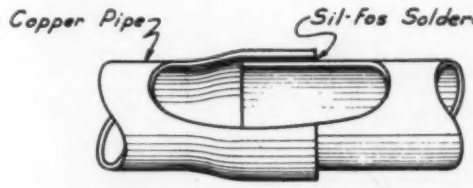
4. The installed cost of copper services is so nearly equal to the installed cost of wrapped steel services that the use of the former is justified in all localities where the soil is too corrosive to permit the use of bare steel. (A revision of conclusions No. 13 and No. 14 of 1932 report).

5. It is economically sound at now existing prices to use 2" and 3" copper mains in soils where the life of wrapped steel is less than 15.5 years if the main is not under pavement, and less than 18.6 years if the main is under heavy pavement. (A revision of conclusions No. 13 and No. 14 of 1932 report, made necessary by changes in the price of copper).

COPPER PIPE JOINTS AND FITTINGS.



SIL-FOS BUTT JOINT
FIG. #1



SIL-FOS BELL AND SPIGOT JOINT
FIG. #2

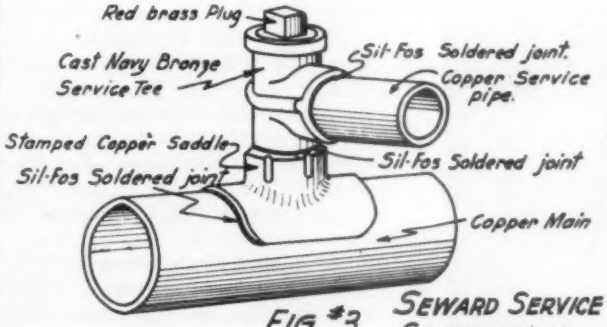
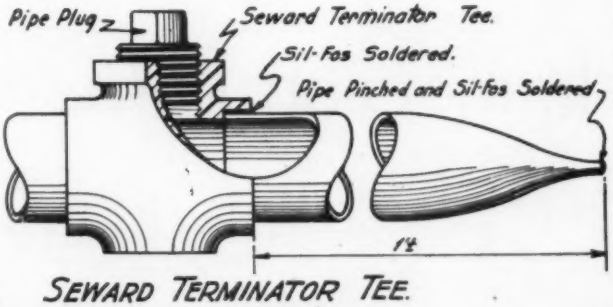


FIG. #3 SEWARD SERVICE CONNECTION.



SEWARD TERMINATOR TEE.
FIG. #4.

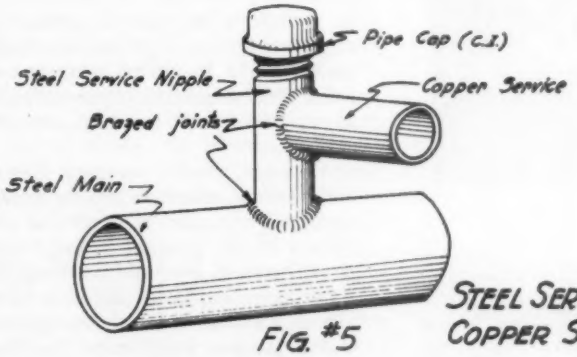
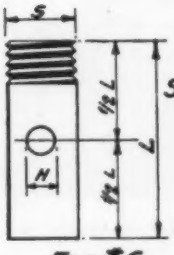


FIG. #5

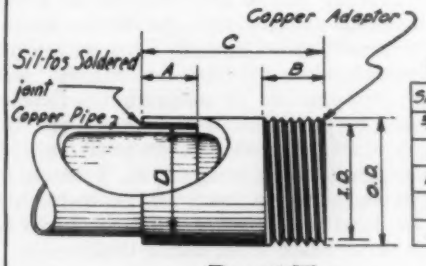


SERVICE NIPPLE TABLE

PIPE (S)	LENGTH (L)	HOLE (N)
3/4"	4"	1/2"
1"	4"	3/4"
1¼"	4½"	7/8"
2"	6"	1¼"

FIG. #6

STEEL SERVICE NIPPLE FOR CONNECTING COPPER SERVICE TO STEEL MAIN.



COPPER ADAPTOR TABLE.

Size	A	B	C	D	I.D.	O.D.
3/4"	3/4"	Std. Pipe Thds.	2"	.88"	.824"	1.05"
1"	3/4"	" "	2"	1.13"	1.049"	1.315"
1¼"	—	" "	2½"	1.38"	1.38"	1.66"
2"	1"	" "	3"	2.19"	2.067"	2.375"
3"	1"	" "	5"	3.19"	3.068"	3.5"

FIG. #7
COPPER ADAPTOR

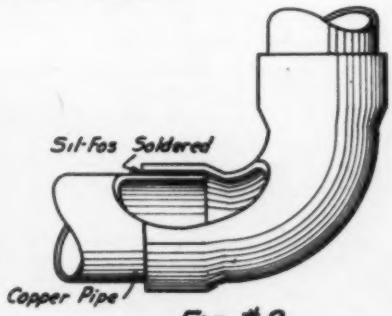
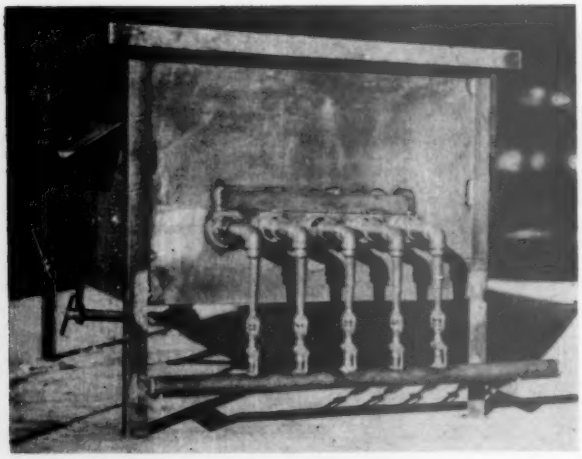


FIG. #8
COPPER ELBOW.



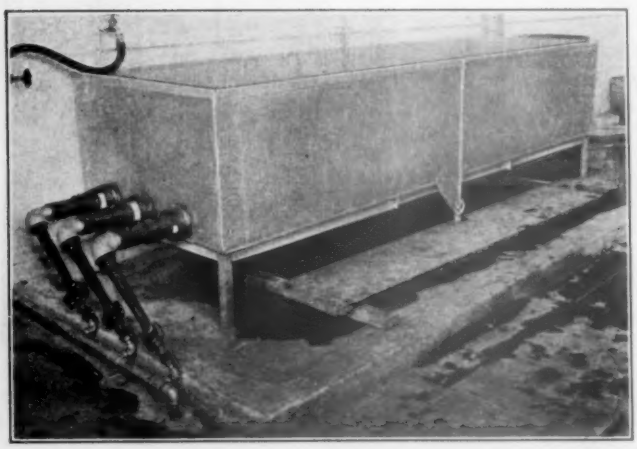
Peanut Cooker

Immersion Burners and Their Applications to Commercial Uses

Charles J. Hones

Secretary, Charles A. Hones, Inc., Baldwin, L. I., N. Y.

Presented at New England Association Meeting, January 10, 1936.



Wine Sterilizing Tank

IT would be a bit difficult to speak on Immersion Heating—its application to Commercial uses without touching upon its other uses, for they all really coincide.

A particular bake oven application made it necessary to develop an efficient burner for *that* use. That burner was found so efficient as to apply to Immersion Heating for industrial uses. This application was found to be adaptable for Commercial uses, so you see they are really all related.

The savings obtained through the use of Immersion Heating are becoming better known to Industry right along. You realize this, too, otherwise you would not give it consideration.

While many of you are familiar with what the term Immersion Heating means, there may be some of you who may not. A definition could be —that it is the name applied to passage of heat energy through pipe or thin walled tubes which are almost completely surrounded by the material or liquid to be heated Some speak of it as submerged heating.

A typical installation would be thus—a tank, pipe coil of sufficient size, installed or practically laid on the inside of the tank with one end projecting outside of the tank and to which a burner of proper size and capacity would be attached by means of a so-called adapter. The other end of the coil emerges from the material and the tank, to act as a flue.

You can readily see how this may differ from other forms of heating, especially in the commercial field. Steam is one process in use but this is an indirect form of heating. First a boiler is required and this is usually at a distance from the appliance. While steam itself may be cheap, there is a lot of heat loss and efficiency due to the distance the steam must travel from the boiler to the vessel to be heated. This means not only loss at the boiler but also through its transmission. Besides the potential heat stored in the steam is limited in its heat transfer through the steam coils, because of its relatively lower temperature than the direct flue gases which would be in contact with direct heating.

Where steam is not available, it has been customary to install burners underneath the tank or appliance. While we here, realize the many advantages of using gas even this way, you also realize that it has its disadvantages. When the material to be heated contains such substances

Do you know what an Immersion Burner is? Do you know which of your present customers might use one to advantage, where it might help you to retain a customer whom your competitors are seeking to take from you, where you might secure an additional customer for gas? This simple, straightforward article explains just what Immersion Burners are, where they have a place and why. Here is an additional weapon for the gas man in the struggle of competition.

that would form sediment on the bottom of the tank, the application of gas burners underneath is decidedly unsatisfactory because it forms a layer on the bottom of the tank. More heat must be used to overcome this insulation formed on the bottom and, in addition to being an expense, it often shortens the life or causes excessive deterioration of the entire appliance. Furthermore, these applications cause spot heating or excessive bottom heating. The bottom may be overheated whereas the sides are underheated.

In the deep fat fryer, for instance, the crumbs and dusting flour together with other sediment settle to the bottom or the heating surface, not only insulating this heating surface but causing a constant charring and carbonization of the sediment. The continual stream of convection currents from the heating surface tends to force the carbonized particles up into the grease which means this should be filtered at the end of each day if it is to be used over again.

To the industrial man this difficulty with direct bottom heating has often proven unsatisfactory in the melting or heating of asphalt, because of so-called coking.

Electricity too is often used for heating. While this may be an efficient way of heating, the efficiency is usually offset by the excessive cost of operation.

To overcome these apparent objections of these other methods of heating, the idea was conceived of conducting the heat through coils or tubes, usually wrought iron or steel pipe, and sometimes boiler tubes. Occasionally brass or bronze pipe is used, and there have been some instances where lead is used where acids may attack other metals.

While steel pipe is the practice here in the east, on the Pacific Coast boiler tubes seem popular, because of their relatively higher heat transfer.

Obviously, this method of heating through coils is ideal inasmuch as its heat transfer to the liquid is much more effective. All the heat liberated from the flame passes through the coils which are immersed in the liquid, and most of this heat is transmitted into the liquid itself. There is very little loss except that escaping from the flue. From the standpoint of efficiency, it is a close competitor of electricity.

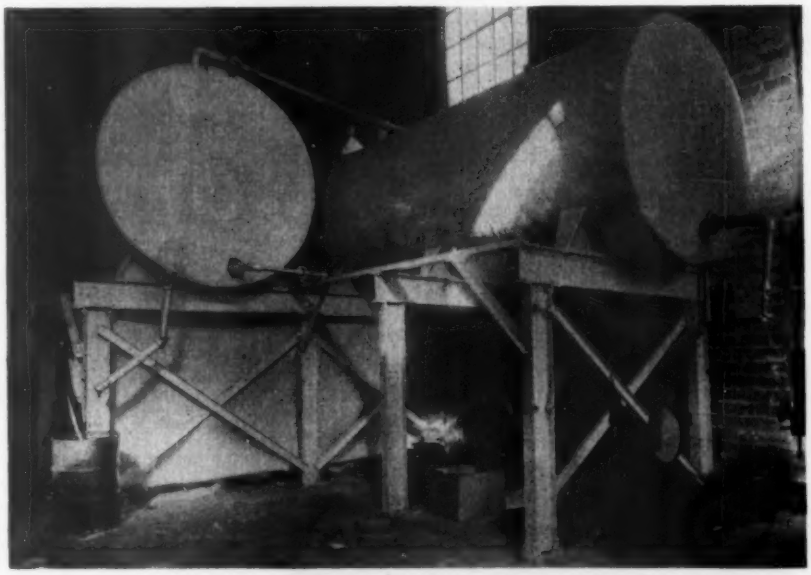
On solution tanks and heating up to around 180°, efficiencies of 80% are often obtained. To reach the boiling point, however, the efficiency is likely to drop slightly and it is possible it may take slightly longer to reach the boiling point, especially in the matter of solutions. This depends largely on the construction of the tank or vessel as to whether enough coil and burner equipment can be installed.

The installation is so simple, too, that it is often used for existing tanks in changing from one fuel to gas or one method of firing to Immersion Heating. Another big feature is that a gas installation is possible on wooden tanks, where usually steam is necessary. A hole can be cut into the end of the tank to permit the burner end of the coil to project through, although in the case of the wooden tank, it is advisable to make the hole a little larger for a protecting sleeve over the coil.

Immersion heating itself is not really new but until a few years ago the standard practice of heating immersion tanks was with high pressure or blast types of burners.

This system meant not only more elaborate and expensive equipment such as boosters, blowers, motors, etc., but furthermore made these systems rather an objection not only as far as cost was concerned but from the terrific noise involved. By mentioning these objections, it is not meant to condemn them as systems for there are innumerable applications to which they may be applied. However, these are the objections for most installations to which immersion heating could be applied. Furthermore there is an exception to soft metal melting and where peculiarly shaped pots are involved.

The designing and improving of an efficient atmospheric burner made it possible to broaden the use of immersion heating, because it meant simple and less expensive equipment, tending to keep the initial cost down to a minimum; besides, automatic temperature control could be easily installed.



Asphalt Storage Tank.

The initial cost of firing a tank with pipe burners for instance is about the same as installing immersion heater burners and coils. In fact, by the time the job is completed the latter will no doubt run lower in initial cost. The immersion heater unit can be set on the floor, whereas the other needs a stand, jacket and insulation; besides, the burner equipment alone is likely to be a bit higher. Insulation on the immersion heated unit is somewhat a matter of opinion for the radiation from the tank would be no greater than the heat in the tank, whereas the radiation from an underfired tank would be largely from the com-

bustion underneath the tank. Personally, I would recommend insulation.

So far, I have endeavored to tell you what immersion heating is and its advantages over other methods of heating whether they be industrial or commercial. I have also spoken of tanks with the atmospheric type burner for Immersion Heating. The rectangular tank or appliance is the most common and efficient one to be heated with this method. Occasionally, it is used in round tanks provided the diameter is not too small as compared with the height.

You probably wonder now as to what kind of installations there are to which immersion heating may be applied. Unfortunately, I could not tell you all, for, of the many immersion burners made and shipped, we ourselves or myself have come in direct contact with but a small percentage as you can realize. There are some of you here who have purchased burners and installed them in places we do not know. Therefore, I can only touch upon some of the many applications. Most of these are purchased and installed by the gas companies and we are not able to check after they are installed.

In the industrial field could be included cleaning and solution tanks; in some cases plating tanks, salt baths, oils, greases, certain tar preparations, ovens and that one bugaboo, the asphalt tank. The last has been more or less a bugaboo not only to the gas man, but to the electric man. Roofing paper concerns have been more or less interested in this and it was such that the first asphalt job came to my attention. The installation contained only 90 gallons of asphalt. The gas consumption was reduced after changing from an underfired installation to immersion heating from 125 cu. ft. per hour to 80 cu. ft.

Recently in upper New York State I saw an installation heating about 12,000 gallons of asphalt using only three of our IH 300 burners, each burner consuming 600 cubic feet of 540 B.T.U. gas at 6 inch pressure.

Here was a case of a concern having tried various kinds of heating. They had rectangular tanks heated by electricity. The cost was becoming prohibitive, and taking too long. Underfired gas heating was applied. This cut the heating up time but saved little in operation costs. The tanks had to be cleaned a few times a year because of the asphalt hardening on the bottom. After a while the bottom of the tank began to warp and it looked as though they were going to break through the bottom—then immersion heating was tried. This cut the time about in half from the electric and beat the time of the direct gas fired. Corrosion and sediment were found almost negligible after a year's use of the immersion burners.

Steam had been used on the large storage tanks but gas immersion heating was tried and proven successful, on not only this 12,000 gallon tank but the other holding 8,000 gallons and equipped with but two IH300 burners.

Just what would be a clear definition of commercial uses I am sometimes a bit at a loss to understand. I take it that it means preparation of food stuffs on a small scale while the same applications may be considered industrial when done on a large scale so whatever they may be, immersion heating has been successfully used for ham boiling peanut cookers, crab cookers, doughnut fryers, potato chip cooking, chicken scalding, sausage cooking, chow mein and noodles. Incidental to these are pasteurizing, bottle washing, pan washing in large bakeries and is now being taken more seriously for use in steam tables.

Here in Boston a few large successful steam table applications have been made. Recently a manufacturer of steam tables purchased a few immersion burners from us in view of giving it a trial as it has evidently come to their attention the effective savings expected to be derived from this type of heating. I understand that one large steam table installation in Boston effected a gas saving of about 50%.

We have pending an application pertaining to pretzel baking as a particular bakery runs pretzel dough through a lye and caustic soda solution before baking. I understand this is to make them puff up. Their present method of heating is not satisfactory and immersion heating is expected to solve their problem. I understand their present method is too slow and underfiring proved too expensive because of the dough particles dropping to the bottom of the tank. This is mentioned in the event any of you run across any similar circumstances.

In various cooking operations, including deep fat frying there has been effected savings of 25 to 40% using Immersion Heating. Besides, it means a uniform cooking. So far I have not mentioned anything about solid fuels as compared to Immersion Heating.

(Continued on page 70)

Potato Chip Cooker

AS THE EDITOR SEES IT

Holder Cost—An Incomplete Story

WHEN two or more technical men of the gas industry get together the inevitable query is: "What is your holder cost?" That figure seems always to have been looked upon as a sort of barometer of efficiency and success. The ancient saying, "The profits of the business are made or lost in the retort house," survives to the present day as a symbol of the vital importance of low operating costs in the manufacturing plant. We have come to take efficiency in that part of our business so for granted that few of us appreciate fully the general reduction in holder costs during the past fifteen years. The engineer, the "Forgotten Man" of the gas industry, deserves a large share of credit for bringing us through the depression. Low holder costs have played an important part in helping us to weather the storm.

Great as may be the satisfaction of past achievement, our principal attention should be focused on the future. So right here let us stop and sharpen our pencils. Present trends indicate that the cost of the manufacturing plant is acquiring an increasing importance.

You will do well to dig out from the files that last appraisal and put down the value of your manufacturing plant,—land, buildings, holders, apparatus and overheads such as engineering and interest, taxes and insurance during construction. These overheads are just as much a cost of the property as the bricks, mortar, iron and steel. If you have no appraisal your accounting department should at least be able to give you the book figures.

How much taxes are you paying each year on your manufacturing plant? (It certainly does not look as if tax rates would be lower in the future.) How much must you put aside each year for renewal and replacement of plant buildings, holders and apparatus? What must be the earnings of your company if it is to remain in sound financial condition, and how much of this amount should be allocated to the manufacturing plant?

Let us take all of these fixed charges, add them to the holder cost and ultimately arrive at a *total production cost* per M. Here is the *real* cost of making gas. This is the price you have to charge if you only manufactured gas and sold it wholesale to another company for distribution.

This total production cost may be a surprise to you if you have never before prepared such a figure. We have seen and prepared a number of them and they gave us food for thought.

At this point it may be well to call in your commercial man. What rate for gas must he have if he is to add a substantial amount of water heating, house heating, commercial and industrial business? We do not mean just taking a little more of the cream, but getting and holding a really substantial amount of it. How does his figure for rates check up with the mere total production cost you have before you?

None recognizes better than ourselves the arguments that may be advanced against this line of procedure. Incremental costs are lower than existing averages. Class rates may be established to aid in securing highly competitive business. The rate man may do much, but he can go only so far with the foundation of costs upon which he must build. The commercial man may do a splendid selling job, but he can only go so far with the rates at his disposal. The truth is that most gas companies need a *lower level of costs* upon which to build their rate structures. A few fortunate ones may not agree,—but ask the executives of almost any independent gas company.

Last month we said in the Journal: "The crying need today is for lowering operating costs and fixed charges so that rates may be established that will give our product even greater competitive advantage than it now enjoys, and we at the same time can make a fair profit. The sales department, the rate engineer. the technical man, in fact every person connected with the industry can aid in bringing this about." Several of our readers have urged us to state in more detail just what we had in mind. And so we start at the beginning,—at that vital spot, the manufacturing plant.

First we urge that each gas company complete the story of the holder cost. Find out what it is really costing you to produce gas. This means holder cost plus fixed charges on the manufacturing plant.

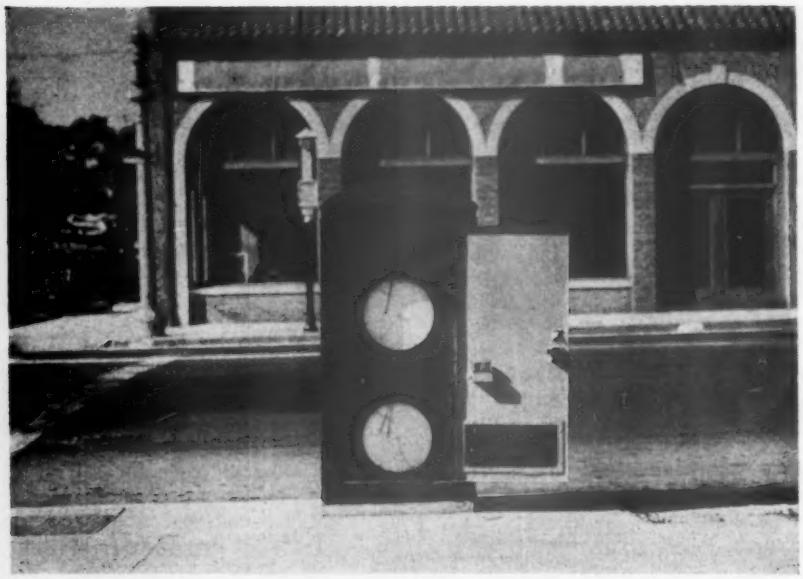
Second, let us recognize frankly that we are facing a constantly poorer load factor. The time is past when annual sales were from 275 to 300 times the maximum day. Even in manufactured gas territories this ratio is generally well on the way downward toward 200; and with house heating probably our greatest potential market, further reduction is likely to occur. Large sales per meter may bring compensating advantages; but the point is that we are in the midst of changing conditions in which the fixed charges on the manufacturing plant are becoming an increasingly important factor in the total cost of producing gas.

What are we to do to solve this problem? The engineer, not the editor, is the one to say. Our province is to outline the problem as we see it. From that point on we must look to our contributors for their best thoughts on its solution.

The fact that we do not now see clear sailing ahead is no cause for discouragement. We have weathered more than one storm in the past. The good sailor trims his sail to the wind. Likewise we must adapt ourselves to the changing conditions in our business.

First, let us recognize that we have a problem of reducing total production costs, and that this problem is becoming more complex because of competition and of changing load conditions. Second, let us put the engineer back on the solution of engineering problems such as the one here outlined, and give him the necessary encouragement and support to enable him to get results. Third, consult the equipment manufacturers. During the depression they have developed many improvements with view to reducing total production costs. Few gas companies have been buying much new equipment, and for that reason have not kept in as close touch with manufacturers as formerly. Even if your plant capacity is ample and you have no money to spend, it will pay to discuss your problems with them. They want to help in any reasonable way. The more money you make, the more money you have to spend.

We have said that every member of the gas industry has a part to play in the present situation. This problem of reducing the cost of production is one on which the manufacturer of plant equipment, the technical man and every works employee can do his full share.



Sidewalk pit with permanent pressure gauge house.

By
ERICK LARSON

Regulator Structures

PART III

Construction and Design of Pits

THE preferable period of the year in which to construct pits or houses depends upon the general climatic conditions. In warm climates the rainy seasons and the exceptionally dry periods are to be avoided when possible. Rains cause a generally muddy condition which tends to increase costs, and the dry season causes dust. Either of these may be objectionable to the public. In cold climates frozen ground adds to costs and causes inconvenience to the public.

Some political divisions have regulations prohibiting construction work in highways during certain seasons of the year.

When permanent improvements are to be made to roadways or surrounding territory, it is generally preferable to delay the construction of regulator structures until the permanent work has progressed to a point which leaves no doubt as to the exact grade and elevation to be adopted for the improvement. While highway departments may lay out plans which are apparently accurate, such plans are frequently changed during construction. This means an increase in expenses if structures erected previous to completion of grading must be remodeled.

Planning of construction work in highways to complete the major part or all of the work before the week-end is desirable so as to provide a minimum of interference with traffic and appearance. This latter reason is more applicable in residential areas than in business or industrial sections. In these business areas it may even be preferable to make any large openings in highways during the week-end when the traffic is at a minimum in such sections.

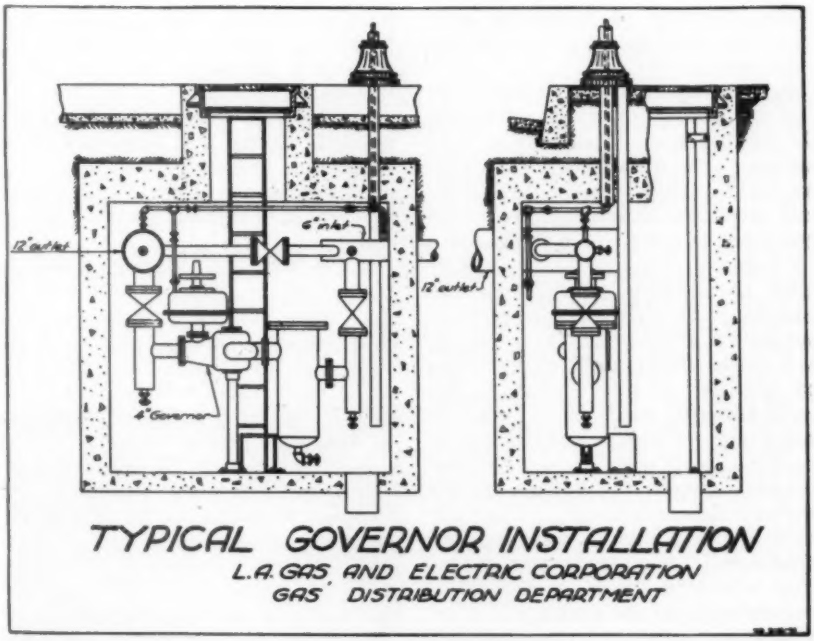
Progress

Construction work should progress with the greatest speed consistent with excellent quality of work. Rapid progress and completion of work on highways has a favorable reaction on lay observers and preserves public good will. The essence of rapid construction is thorough planning to provide the proper amount of labor when necessary and have material and equipment on hand when needed but not stored on highways in such a manner as to add to interference with traffic. Public opinion is particularly affected by loitering of workmen. Occasionally a certain amount of excess labor is unavoidable; and to avoid public criticism the foreman may have the extra men near the work in progress, but not where they will be conspicuous.

Protection of Property

All property both public and private immediately adjacent to pit or house construction should be fully protected to the satisfaction of the foreman, public officials and adjacent occupants of buildings. Protection of trees offers one of the greatest difficulties, it being practically impossible to avoid cutting some of the roots. Larger roots should be carefully exposed, wrapped and protected against damage during the course of the construction and should not be cut. Shrubs, particularly those immediately adjacent to highways, are ordinarily of a hardy variety; and the cutting of some roots should not interfere with their growth. As previously mentioned under services, it is preferable to cut sod carefully and store it rather than to seed grass, as there is difficulty in matching with seed the grass existing on the remaining parts of lawns.

When replacing cement sidewalks the color and physical appearance of the surface should be matched as closely as possible with adjacent sections. Where the sidewalk is gravel,



Note location of vent openings. One vent line used to carry pressure recording lines to pressure gauge housing above ground. Note method of securing advantage of frame in sidewalk with pit partly under roadway.

it is often conducive to public good will to place cinders on roadways, cold patch material on the section recently excavated not only to leave a well graded walk and improve appearances but to eliminate as far as possible any muddy conditions. It is preferable to add a slight amount to the initial cost and leave a walk in better than original condition than have complaints.

The protection of other sub-surface structures is essential; and knowledge of the type, extent and location of such structures is largely a matter of care and observation on the part of the foreman. Courtesy demands that other utilities be notified immediately of even the slightest damage to their structures.

Protection of Person

Protection of person is allied with general safety, but has for its objective construction work that provides and leaves conditions free from hazards to those who pass over or by as well as use the structure. In addition to constructing tops of pits to meet the specifications, extra efforts to thoroughly tamp the back fill immediately adjacent to a pit will prevent accidents due to settlement. Careful grading of the tops of pits or of the concrete roadway over a pit to conform with adjacent sections and the avoidance of projecting wire or stones adds to safety. When the area surrounding a pit is not of concrete, added precautions are necessary to assure thorough tamping of the back fill and the placing of a sufficient quantity of patching material to insure that the ground will remain in place and provide a smooth riding surface for vehicles. Particularly where pits are not built under concrete roadways, frequent inspection of them immediately following construction is necessary to detect any indications of unsafe conditions. It is advantageous for utilities to take photographs of conditions surrounding pits not only previous to and during construction, but also at any time when slightly unsafe conditions are noted and before they are rectified.

During the final inspection of a concrete structure it is important to detect and eliminate any projections, such as the remains of clamps or wires used to hold forms, stone used as an ingredient, and the concrete where it may have hardened between form boards. The floor should also be inspected and a smooth surface assured.

Ceiling

The structural design and general specifications for concrete or other materials used are more properly within the scope of books on those subjects. There are, however, certain features which have been found to be particularly advantageous in gas practice and these will be noted as generalities.

The inside surface of the ceiling or roof should be even, as any beams, reinforcing, piping, etc., projecting below the general level is a potential source of personal injury, and also adds to the difficulties of illumination, general maintenance and ventilation. Also, gas may accumulate in the space between projections. The location of rectangular manhole frames directly over inlet or outlet mains or any important equipment increases hazards since the cover falling through the opening will cause damage and perhaps serious accident. Manholes which must be placed above equipment should preferably be of the round type.

Combination gauge box and vent post. Attractive posts are not objected to even in residential sections.

The difficulty of providing adequate illumination in a pit has caused some companies to adopt glass gratings, sometimes termed subway gratings, for the tops except at manholes. The grating is used rather than solid concrete. The use of such glass tops has been mainly confined to sidewalk locations, although attempt has been made to use them in roadways.

Frequently the pit top is underneath the bottom of the concrete roadway slab. The expansion and contraction of a concrete roadway may cause damage to a pit when any portion of the latter is integral with the road slab. To avoid such damage a common practice is to provide at least one one-inch cushion of sand between the bottom of the roadway slab and the top of the pit. Sand is preferable to any type of expansion joint material as the material would be displaced and leave the slab bridging the pit top. The installation of manhole frames integral with a concrete roadway slab may cause the same difficulty unless the expansion joints of the slab are in the immediate vicinity of the pit. An expansion joint surrounding the manhole frame will not only minimize the effect of roadway slab movement but will also facilitate the removal of the frame should that become necessary.

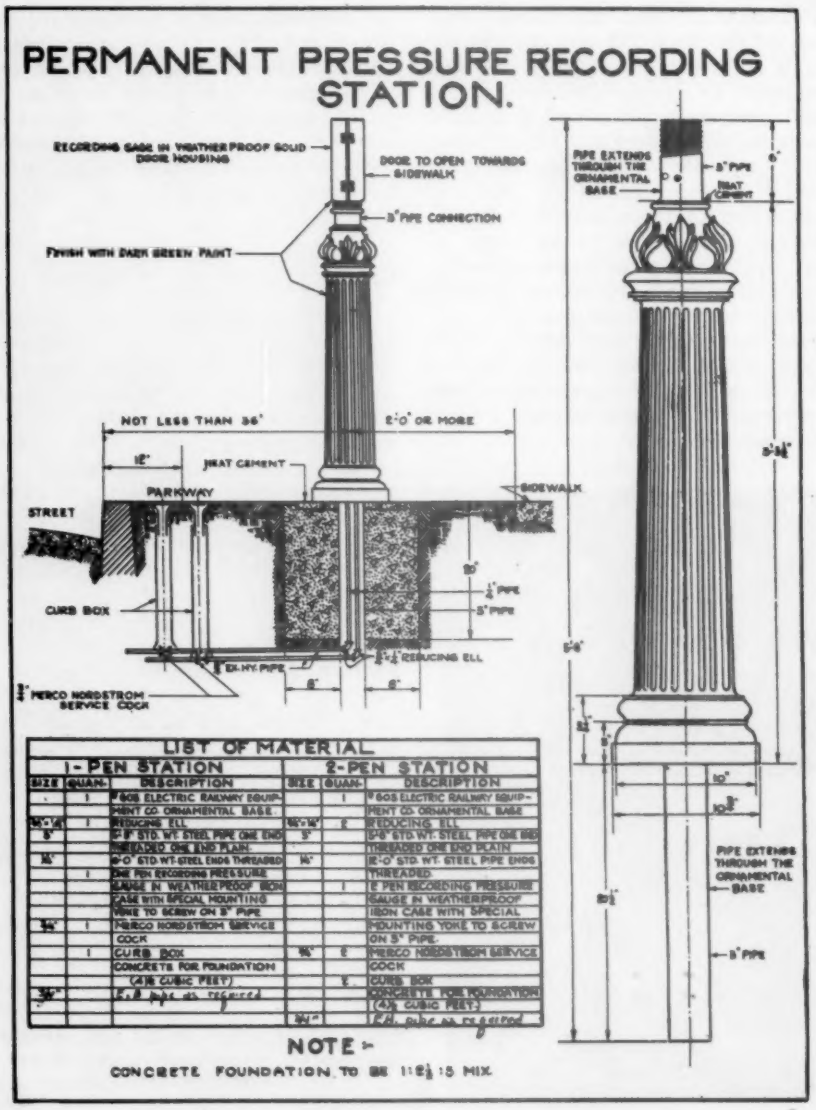
Advocates of placing manhole frames on top of a pit roof contend that there is desirable leeway for changing the frame during roadway regrading, the top is easier to construct, the frame will be held sufficiently rigid by the surrounding earth or concrete of the roadway and a more even distribution of load is secured on the pit top. Advocates of placing the frame integral with the pit roof, the top of which is flush with the roadway, claim as advantages the lessened amount of concrete necessary, less excavating, more headroom where ground water conditions are adverse and a greater clearance over the regulator when the main is not deep and trapping of the main or regulator is undesirable.

On pits located in sidewalks or on private property a hinged cover may be used. Covers divided into as many as four parts, each hinged, have been used to permit removal of the whole pit top. Dividing into sections results in less weight per section, greater convenience for opening; and a larger area may be provided with cover. Sectionalizing of the cover requires support which are ordinarily removable, especially in pits where the headroom is insufficient for a man to stand upright. Hinged covers, which allow for exposing a larger area than a reguar manhole frame, decrease costs, aid ventilation, increase illumination and safety, facilitate changing of regulators, speed maintenance and inspection and eliminate danger of rectangular covers falling into pit. Removable vertical rods at the door hinges are usually provided to support the cover sections when open and thus avoid the covers striking adjacent shrubs, trees or structures.

Vents

Adequate venting of pits without resorting to forced draft is particularly difficult. Experience has demonstrated that vent lines less than four inches in diameter dependent upon natural draft are usually unsatisfactory and do not maintain circulation in a pit. More than one vent line is usually required to maintain a dry atmosphere within a pit which is not subject to flood conditions but is exposed to dampness. It has also been found that single vents must be carried to a sufficient height to avoid poor chimney draft conditions near the surface of the ground. A height of 14 feet or more is desirable when practical.

In place of a single vent more success has been attained by the use of two three-inch pipe conduits connected to hollow ornamental gauge posts. Fresh air enters through the top of the gauge post and passes down through the conduit, which extends to within at least twelve inches of the vault floor. The exhaust conduit inlet is near the ceiling of the vault and the outlet at the base of the post. The conduits should be as short as possible. Otherwise the low height of the exhaust will not result in an induced draft.


PERMANENT PRESSURE RECORDING STATION.
RECORDING GAGE IN WEATHER PROOF SOLID DOOR HOUSING
DOOR TO OPEN TOWARDS SIDEWALK
3" PIPE CONNECTION
FINISH WITH DARK GREEN PAINT
NOT LESS THAN 36"
2'-0" OR MORE
12"
JIHAT CEMENT
PARKWAY
SIDEWALK
STREET
CURB BOX
3" PIPE
REDUCING ELL
EX. HY. PIPE
PERCO NORDSTROM SERVICE COCK
PIPE EXTENDS THROUGH THE ORNAMENTAL BASE
3" PIPE
JIHAT CEMENT
PIPE EXTENDS THROUGH THE ORNAMENTAL BASE
3" PIPE
LIST OF MATERIAL
1-PEN STATION
2-PEN STATION
SIZE
QUAN.
DESCRIPTION
1 W605 ELECTRIC RAILWAY EQUIPMENT CO. ORNAMENTAL BASE
1 REDUCING ELL
3'-8" STD. WT. STEEL PIPE ONE END THREADED ONE END PLAIN
8'-0" STD. WT. STEEL ENDS THREADED
1 ONE PEN RECORDING PRESSURE GAUGE IN WEATHERPROOF BOX CASE WITH SPECIAL MOUNTING
WIRE TO SCREW ON 3" PIPE
1 PERCO NORDSTROM SERVICE COCK
1 CURB BOX
CONCRETE FOR FOUNDATION (4)⅜ CUBIC FEET)
2 PEN RECORDING PRESSURE GAUGE IN WEATHERPROOF IRON CASE WITH SPECIAL MOUNTING YOKE TO SCREW ON 3" PIPE
2 PERCO NORDSTROM SERVICE COCK
2 CURB BOX
CONCRETE FOR FOUNDATION (4)⅜ CUBIC FEET)
NOTE:-
CONCRETE FOUNDATION TO BE 1:2½:5 MIX.

This type of standard easily adapted to ventilation as well as housing recording gauges.

Turbine driven ventilators nave been used with success where the flow of gas is sufficient at all times to provide the necessary gas volume to drive the turbine. Where the regulator inlet pressure is high it is customary to use a special pressure or line regulator ahead of the turbine to provide a uniform pressure on the turbine inlet. When the quantity of gas flowing through a regulator at the off peak hours is insufficient to operate a turbine ventilator, automatic equipment may be used to discontinue operation of the turbine. The quantity of gas required to drive existing line regulator pit ventilating turbines operating at from 1 to 2000 RPM depends on the inlet pressure but averages 150 cu. ft. per hour. Lubrication of the turbine and ventilating fan is required about once every two weeks, and replacement of the bearings and shafts has been found necessary only every 1½ to 2 years.

When ventilation is the result of natural draft or differential in pressure between two ends of a vent, success depends on several general principles. The elevation of the outlet of the vent above the inlet is one of the most important considerations, and as great a difference should be secured as possible. This factor follows the general principles of chimneys and stacks.

Temperature differentials between the inlet and outlet of the vent also affects the quality of air passing. During the warmer periods of the year the temperature of the air in a pit is generally lower than that of the surrounding atmosphere, and this detracts from the effectiveness of the venting. During cold seasons less difficulty is experienced, as the temperature differentials are favorable for inducing draft and, therefore, assist the other advantageous factors.

Where possible the outlet of the vent should be designed to take advantage of wind or air currents. When ornamental sidewalk posts are used the top of the post is sometimes designed in imitation of building ventilators. Other ventilating posts have the inlet on top. The force of the air is directed into the vent inlet thence down into the pit and up through the outlet, which outlet is near the ground surface where air currents do not have the same effect as at the top of the post. In locations where the wind velocity is low or there is no wind for considerable periods this design is still partly effective although the ordinary inlet may become the outlet.

All openings into vents whether inlets or outlets must provide against the possibility of rain or snow entering and collecting in the vent or entering the pit. Ornamental sidewalk posts have the advantage that more thought and effort is usually concentrated on producing effective ventilation and on presenting a more pleasing appearance than pipes run up any type of existing structure. Many utilities follow the practice of placing screens of at least 40 mesh size over all vent openings to the atmosphere whether inlets or outlets. Protecting screens require frequent inspection.

Assembled cast iron manhole. Section joints are filled with a waterproof compound. Pipe entrances may be off or on center line.

The area of the vent is an important consideration and following stack design the effectiveness is approximately directly proportional to the area.

The location of the vent opening in the pit is important. It is seldom possible for a single vent to maintain sufficient circulation within the whole interior. Ventilation is more effective when the exhaust opening is located in the top center of a pit or at that location where the greatest concentration of gases ordinarily take place. Placing the opening in one corner of a pit would result in a current along the top or bottom whereas locating it a foot or more below the top or above the bottom would tend to make the resulting air currents within the pit cover a greater volume. The effectiveness of the exhaust vent may also be changed by its proximity to buildings or other structures which tend to divert air currents and cause down drafts in an exhaust vent.

The principal use of a vent is to provide air currents in a pit so as to keep the interior dry rather than to remove any considerable quantity of gas. A natural draft vent of the size ordinarily placed in pits could not remove gases as rapidly as they would seep into it from a split diaphragm or any major leak. However, the vents should provide sufficient circulation to care for ordinary small leaks whose accumulation in an unvented pit might result in the atmosphere becoming saturated to such a point that the mixture would be explosive.

One advantage of ornamental vent posts of low height is that the odor of gas coming out of the vents may be detected by those passing by who frequently will report it. This results in repairs being made prior to discovery of need for them by the inspectors on their regular calls. Inspectors or maintenance men may be forwarned of gaseous atmospheres in pits by examination of vents before removing manhole covers.

Openings

No openings are left in pit walls or floors except those specially installed to provide for water drainage. Unless a water tight joint is originally made around parts penetrating a wall, cold patch material, pipe coating enamel or other sealing material may be forced into the openings to provide a water and moisture proof seam. The purpose of sealing is not only to prevent the entrance of water, bugs or insects but also to prevent any gas from leaks outside of the pit or gases originating from some foreign source gaining entrance into the pit. These add to the difficulty of locating the leaks in the pit itself and also increase the possibility of explosive mixtures accumulating. Vice versa a leak in a pit may find exit through the unsealed sections of a wall and follow ducts or any type of sub-surface structure into adjoining buildings or other subsurface structures where the accumulation may cause an unsafe condition. There is also the possibility of leaks within a pit traveling through unsealed sections to vegetation or trees in the vicinity and causing damage.

Cast Iron Pits

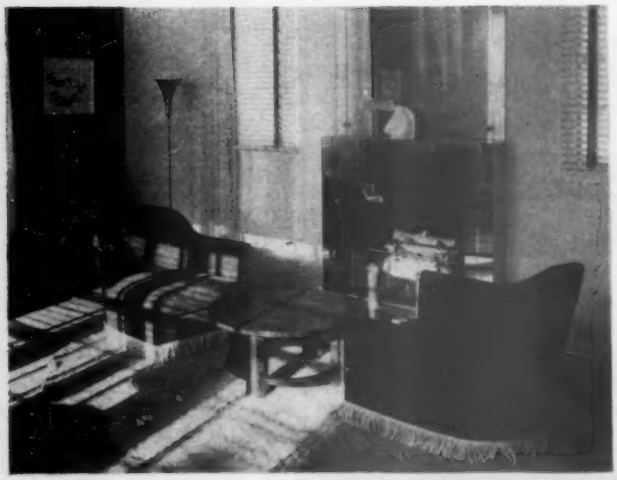
Cast iron manholes have become standardized and, therefore, there is not a wide selection when designing a pit. In selecting cast iron pits it is desirable to choose those with small vertical sections for convenience in handling and installation. Cast iron pits have particular advantage when the pits are temporary or have only a few years of desired existence, as the cast iron sections may be easily dismantled, removed

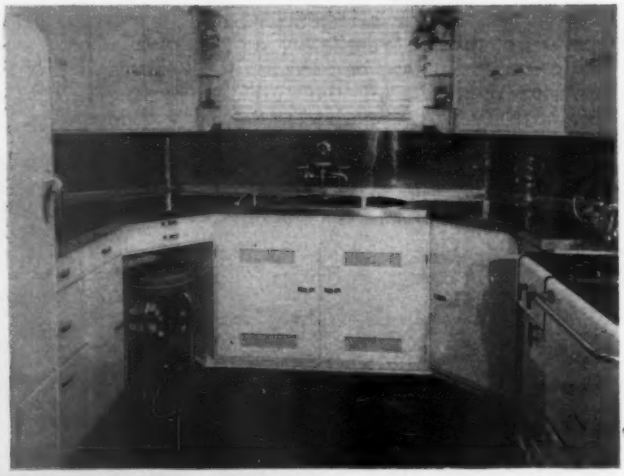
(Continued on page 68)

All Gas Wonder House

Built By The Grand Rapids Gas Light Co.

GRAND RAPIDS, MICH.





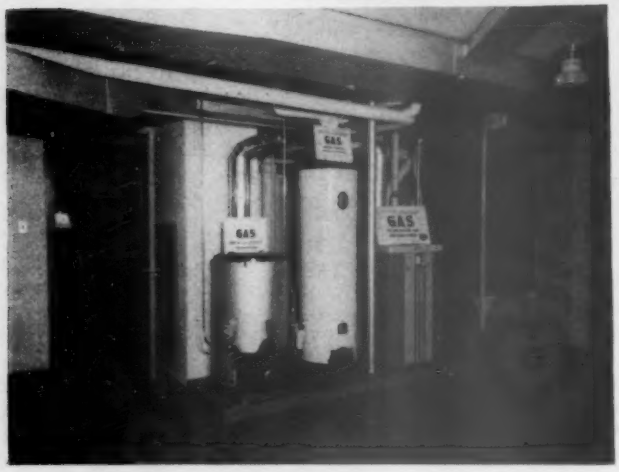
FEATURES OF INTEREST TO GAS INDUSTRY

1. The project was conceived, financed and completed in all details by the Gas Company alone; excepting only for the floor coverings, draperies and furniture, which were installed by the city's largest department store.

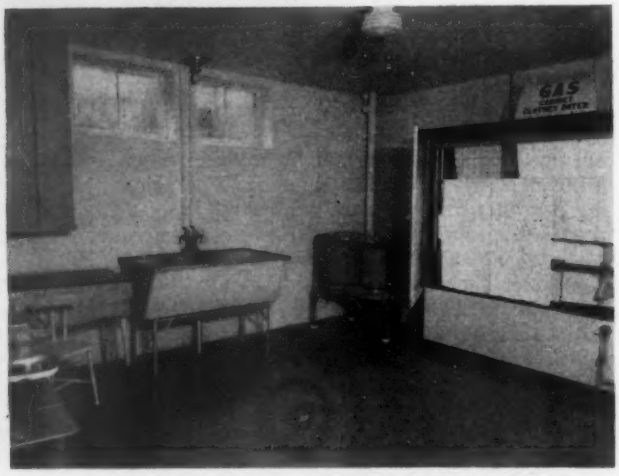
2. It is not just another model home, of which most communities have had one or several, but is an example of the very latest development in home design, construction, and furnishings, yet not objectionably ultra-modern.

3. Being of most modern and advanced design, the house serves as a background against which is dramatized the perfect fusion of the modern building idea with the modern gas appliance, and the modern use of gas in its various applications to domestic use.

4. The location of the house in a suburb having large building lots and spacious streets made some special outdoor illumination desirable. Therefore, two lamp posts, each bearing two 3000 candle power Humphrey Gas Floodlights, were installed temporarily with the necessary controls and these lamps are in operation daily from darkness until 9:00 P.M.

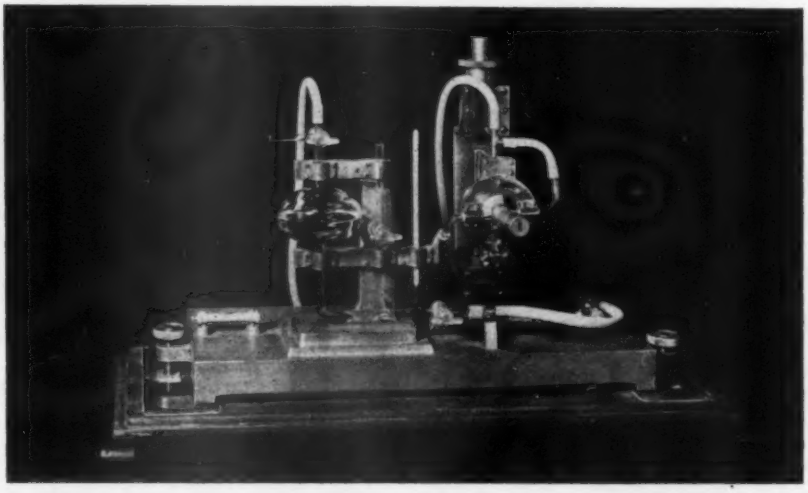


5. Gas features include range, refrigeration, incinerator, house heating boiler, water heater, laundry stove, clothes dryer and three fireplace heaters.



6. An eight page section of the January 1, 1936, issue of The Grand Rapids Press was devoted exclusively to a complete story of the "All Gas Wonder House."

Improved Micromanometer Measures Minute Pressures



By Harry W. Smith, Jr.,

American Gas Association
Testing Laboratories

A SIMPLE, convenient, and rugged design of micromanometer, adaptable to routine measurements of minute pressures and pressure differentials, has been developed by engineers of the American Gas Association Testing Laboratories and successfully used by both the Cleveland and Los Angeles Laboratories for several years. In the gas industry, this instrument is very valuable for measuring such small gas pressures as are encountered in the flues of gas appliances and in draft hoods, and for determining such small pressure drops as exist across certain orifice meter plates and open gas controls or fittings. Its application in industry elsewhere could and should, of course, extend far beyond such bounds.

The American Gas Association Micromanometer consists, as shown in the accompanying drawing and photograph, primarily of a heavy metal base, equipped with suitable leveling screws and indicating levels, and supporting reasonably massive columns carrying respectively the micrometer screw assembly and the gage liquid reservoir. The reading meniscus lies in a short length of straight ¼-inch glass tubing inclined at a slight angle from horizontal (generally in the neighborhood of 3 degrees) and securely affixed to a thick brass annular plate attached to the micrometer screw. This plate may be rotated and clamped to its carriage in order to permit adjustment of the slope of the meniscus tube. The other arm of the gage, comprised of a 3 to 4-inch diameter liquid reservoir bulb, preferably with straight vertical sides, is clamped rigidly to the left brass column and connected to the movable meniscus tube by a length of thick-walled rubber tubing as short as possible and directed uniformly upward so that bubbles may not be trapped therein.

At its mid-point, the meniscus tube is supplied with a cross-hair or engraved hair-line. The meniscus is observed through a magnifying eyepiece of the variety commonly used for reading precise calibrated mercury thermometers. It is often necessary to locate behind the hair-line and in line with the eyepiece, a light disc, painted in flat white, to facilitate reading in questionable light.

Forty threads per inch, corresponding to a linear pitch of 0.025 inch, should be cut on the micrometer screw, the diameter of which should not be less than ½ inch. At the Testing Laboratories the screw head is divided 25 divisions to the circle, affording a division mark on the instrument for every 0.001 inch of pressure. By interpolating between the divisions in fifths, accurate readings may be made to 0.0002 inch.

Both openings of the glass gage system, the two pressure connections, are fitted with vent branches including glass stop cocks. All glass tubing clamps on the apparatus are fashioned of brass but lined with rubber to preclude breakage by shock or expansion.

The Testing Laboratories employ methyl alcohol as the gage liquid since it does not affect the rubber tubing, possesses an accurately known specific gravity, and exhibits a low surface tension. Distilled water, or any other liquid may, of course, be used with proper care so long as the specific gravity is known. If the instrument is constructed as indicated, precise readings may be made with it in 30 seconds. Additional speed of measurement may, of course, be attained if the slope of the meniscus tube is set at more than 3 degrees from level, although some sensitivity is sacrificed thereby. A slope of less than 3 degrees destroys the ease of adjustment necessary for routine usage and adds little or nothing to the accuracy of readings.

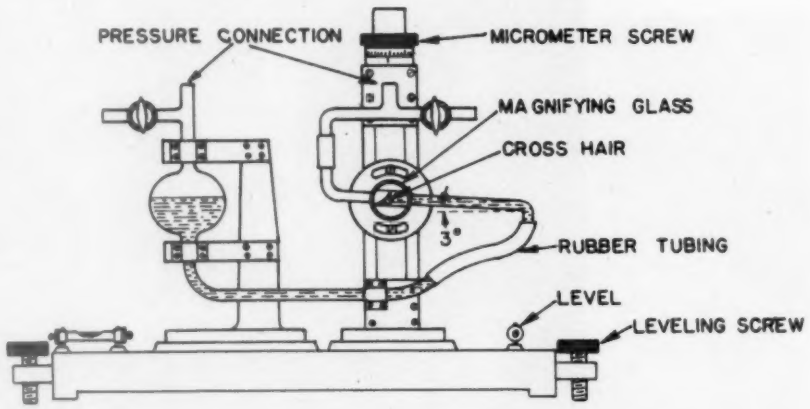
When using the micromanometer it is essential that the meniscus be brought to the point of adjustment on the cross-hair always by turning the micrometer head in the same direction (that which draws the meniscus tube upward). This procedure overcomes

errors due to play in the micrometer screw threads and failure of the movable assembly to drop against the friction of its ways.

Contrary to frequent belief, it is not mandatory that the sides of the liquid reservoir be absolutely vertical at the risk of error. So long as the volume of the liquid in the gage remains the same, the volume between the hair-line (when the meniscus is adjusted upon it) and the surface of liquid in the reservoir must be the same, and, therefore, the level of the liquid in the reservoir bulb is, at the completion of any adjustment, identical to that obtained with atmospheric pressure at both points of pressure connection. The walls of the reservoir should be reasonably straight and its diameter reasonably large only to minimize the small errors due to evaporation, wetting of gage walls, and oscillation of the meniscus during adjustment.

In operation, the meniscus is simply adjusted to the hair-line with atmospheric pressure at both ends of the gage, a micrometer head reading taken, the pressure or pressure differential condition that is to be measured established by turning suitable cocks, the meniscus readjusted to the hair-line and the micrometer head again read. The simple difference between the two readings, in marked divisions, gives the pressure or the differential directly in 0.001 inch of gage fluid column. Since the instrument is so sensitive, it is often necessary to protect the pressure connections from drafts, to check on temperature variations, and to read the zero adjustment of the meniscus frequently whenever a long series of observations is being made.

Being at once elementary in theory, simple in operation, inexpensive in construction, rapid in adjustment, precise, direct reading, and rugged, the American Gas Association Testing Laboratories' Micromanometer should find wide use in many industrial fields.



New Ruling Requires Regulators on All Floor Furnaces Whenever Approved

ON and after July 1, 1936, all gas floor furnaces bearing the Seal of Approval of the American Gas Association Testing Laboratories must be equipped with gas pressure regulators regardless of the date of test and certification. This ruling, adopted by the Subcommittee on Approval Requirements for Central Heating Gas Appliances at its October 18 meeting in Chicago, has just been approved by the American Gas Association Approval Requirements Committee, A.S.A. Sectional Committee, Project Z21, by letter ballot.

The requirement of regulators on floor furnaces is not new. All floor furnaces tested and approved by the Laboratories since January 1, 1935, have necessarily been equipped with pressure control accessories as specified by the American Standard Approval Requirements for Central Heating Gas Appliances effective since that date. The new ruling merely makes it necessary that floor furnaces approved prior to January 1, 1935, be so equipped if certification is to be continued.

Reasons for originally demanding pressure regulation on all warm air furnaces, including floor furnaces, chiefly concerned safety and efficiency. By reducing the possible range of variation of inlet gas pressure through the medium of a regulator, a more precise design of furnace for better combustion and higher efficiency is permitted.

Fairness to all manufacturers prompted the recent action making the requirement of regulating means retroactive to apply to all units. Since gas pressure regulators represent an appreciable cost factor in the manufacture of floor furnaces, it would seem unjust to specify this type of accessory on all new approved models, but not on old ones.

The new ruling becomes effective on July 1, in order to give affected manufacturers a six-months' period of grace in which to arrange for fitting their products with regulators. All producers of floor furnaces have been notified by letter of this action.

Flexible Gas Tubing Standards Revised

FIVE proposed revisions to the American Standard Approval Requirements for Flexible Gas Tubing Z21.2-1932, have been finally approved by the American Gas Association Approval Requirements Committee, A.S.A. Sectional Committee, Project Z21, to become effective immediately.

Essentially the changes made limit any reductions of internal diameter of tubing caused by cutting, forbid the appearance of cement or other foreign material in gas ways or on end connections, and eliminate the minimum capacity heretofore required of all flexible gas tubing. Capacity tests will, of course, continue to be applied and the results be recorded. It is believed that the measurable capacity is generally limited by either internal tubing obstructions or hose end nozzles which matters are both currently covered by suitable size or performance requirements, and that the service capacity is largely contingent upon the length of tubing used which factor cannot well be regulated. Satisfactory past performance records of many models of flexible gas tubing seem to justify the revisions made.

Inasmuch as most of the flexible gas tubing listed in the American Gas Association Directory of Approved Gas Appliance and Listed Accessories was tested and certified prior to January 1, 1931, many samples will have to be resubmitted for test this year in accordance with the Association's "five-year" policy, if approval is to be continued. Such testing will be conducted in accordance with the new revised standards.

Control Instruments Set on an Especially Constructed Board Close to Furnace and in Full Sight of Hammer Crew.

Gas Firing Improves Columbia Tool Steels

Winfield Foster

Superintendent of Publicity,
The Peoples Gas Light & Coke Co.,
Chicago, Ill.

AN IMPROVEMENT in the quality of the finished product, coupled with a decreased scale loss, has followed the installation of the first completely controlled gas-fired furnaces for forging of tool steels at the Chicago Heights plant of the Columbia Tool Steel Company.

Following the first installation, three additional furnaces have been converted to gas firing, and complete conversion of the plant to the use of gas is in prospect as a result of the successful operation of these furnaces. The installations were made by the Mahr Manufacturing Company of Minneapolis, under the direction of Robert G. Guthrie, chief metallurgist for The Peoples Gas Light and Coke Company of Chicago, in whose laboratory the preliminary research leading to the installation was conducted.

The success of the Columbia installation is based upon a new conception of gas, involving recognition of the fact that gas is a valuable metallurgical chemical in addition to being a source of heat. Mr. Guthrie and his associate, Dr. Oscar J. Wilbor, have been engaged in research of this nature for a number of years, and the new installation is practical proof of the value of their research.

Gas has been used, with varying success, at various times during the past fifty years as a fuel for forging furnaces. As a fuel alone, it showed some superiority over other fuels, due to its greater ease of control, but it was not until the problem was approached from the present angle that the full advantages of gas were realized.

The Columbia installation now involves the conversion to gas firing of four furnaces with hearths up to 16 feet in length and seven feet in depth, with loading capacities up to 20,000 pounds per charge. The work of conversion was not exceedingly complicated.

The insides of the furnaces were re-designed and re-bricked in order to give satisfactory dimensions and conditions for gas firing. Flue vents were installed in place of stacks,

Columbia Tool Steel Plant Showing Furnaces Converted to Gas Firing.

and fireboxes were bricked over.

Each furnace was equipped with three Mahr low-pressure sealed-in burners of special design, each burner having a capacity of 2,100 cubic feet of 1,000 Btu. natural gas per hour mounted in an especially constructed and proportioned combustion chamber. Air is supplied by individual blowers on each furnace.

Of special interest is the fact that the control attempted required that each furnace be equipped with two-position gas and air mechanical positive proportioning valves, with mechanical linkage and electrical operation. For this purpose a North America motor operated valve was found best suited.

Interest in the installation, however, is centered about the controls provided. In contrast with traditional practice, the control instruments are set on an especially mounted control board close to the furnace and in full sight of the hammer crew, instead of being mounted in some other part of the plant on a central control board.

The controls themselves are original, and it is on the theory of perfect control that the success of the Columbia installation is based.

In addition to the usual recording temperature controller, the controls include gas and air regulating valves, a continuous gas analysis recorder for each furnace, highly accurate furnace pressure gauges, and gas pressure regulators.

An interesting feature of the arrangement is that the crew foreman himself determines the heating program for any given charge. A slate is provided on which he lays out the 24-hour program. A typical program, for instance, will run as follows: 11 P.M. temperature 1450 degrees; 3 A.M. temperature 1950 degrees; 5 A.M. temperature 2300 degrees, against a work starting time of 2300 degrees.

At the hours designated, the night men set the temperature on the recording temperature controllers, and the hammer foreman can satisfy himself, by a glance at the recorder, that his program has been followed and that the material is ready for working.

This practice not only assures accurate temperature control, but makes possible a controlled heating rate, with definite starting and finishing maximum and minimum temperatures.

Controlled heating thus assures that the work will be ready for the hammer crew in the best condition for forging, but the controlled atmosphere of the furnace plays an even more important role in assuring the quality of the finished work. By controlling the furnace atmosphere, decarburization of the surface has been reduced 66 and 2/3 per cent, and scaling has been reduced 75 per cent, the scale that comes off at the first hammer-blows being paper-thin, and thus improving recovery in salable weight. Previous losses, from ingots to finished bars, had run as high as 9.4 per cent.

Another important advantage to Columbia lies in the absolute uniformity of the product from heat to heat, day to day, season to season, and year to year consequent upon the controlled atmospheres of the new furnaces, and upon their freedom from outside variables.

Thus, the fact that there is no stack in connection with the furnaces, and therefore no inflow draft around furnace doors, assures absolute uniformity of the product, uniform heating of the billets from one end to the other being the result. Actually, one of the most important features of the entire design, the feature which makes possible all the control and uniformity, is the use of a relatively high positive furnace pressure. This condition makes the operation of the furnace entirely independent of outside weather conditions, which are often annoying in the operation of furnaces which depend upon stack draft in their operation.

Because of this positive pressure, a curtain of air is provided by blowers which direct a thin sheet of air upward in front of the furnace doors, to protect the workmen.

Among the collateral advantages following the conversion to gas firing are improved working conditions for the hammer crew, no smoke, much greater cleanliness, and more healthful atmosphere.

Firing speed has been increased 500 per cent, which is an important item, and all danger of overheating the work has been done away with. Under-heating of work has been eliminated. The thermal efficiency of the furnaces was increased approximately 50 per cent by elimination of stack and infiltration losses which attended the conversion to gas.

An additional advantage and economy, it was pointed out, would result in a new installation of gas-fired furnaces since the cost of erecting and maintaining a smoke stack is entirely eliminated. Other economies result from savings in fuel handling costs.

The conversion to gas firing of this plant of the Columbia Tool Steel Company, one of the oldest fine steel companies in the country, has aroused considerable interest among members of the trade. Radical in its design, it marks a new departure from old traditions in heating methods. Of greater significance, however, is the fact that the remarkable success which it has recorded marks another forward step toward perfection in the fine art of making tool steels.

Gas Unit Heaters

Since the first pioneer installations of gas-fired unit heaters were installed in Cincinnati, including a large factory and three hangars at the Municipal Airport, they have been adopted as standard heating equipment by various large chain store organizations, among them the Kroger Grocery & Baking Company, whose general offices and engineering department are located in Cincinnati. This company has been using gas-fired unit heaters for the past eight years and has found their performance and operating economies most satisfactory.

Recently the Kroger Grocery & Baking Company have found it necessary to erect a new group of buildings in order to more closely centralize various manufacturing and packing departments. In this general rearrangement program they vacated a large part of a three-story building that formerly housed the baking department. This vacated building is a modern fireproof structure, well ventilated and lighted on three exposures.

Alterations were planned and the building was made available for the printing department which required more floor area. The original building was heated with old style steam radiation supplied by two 300 hp boilers. These boilers also supplied process steam for which there was a large demand when the building was used for baking and other food manufacturing. With the removal of these departments to another location the boiler hp was entirely too large to efficiently supply the heating requirements only.

In order to eliminate as much soot, coal dust and fly ash from this location, gas was selected as fuel. A total of 23 unit heaters were installed throughout the three floors of this building and are working most satisfactorily.

DETROIT RATE PLAN

As Approved by the Court

The Corporation Counsel

December 11, 1935.

To the Honorable, the Common Council:

Gentlemen—On October 21st last, you transmitted to this office a report by Mr. Frank P. Fisher on proposed terms and conditions for natural gas service for the Detroit area and you directed that this Department make a study of the proposal for the protection of the interest of the city.

We have had many conferences with attorneys representing the Detroit City Gas Company and we have arrived at the conclusion that in order to settle and compromise the problems of rates and service existing between the Detroit City Gas Company and the City of Detroit and secure natural gas that two things should be done:

First, that the case now pending in the Circuit Court for Wayne County, which involved the reasonableness of the April 8th rate schedule, should have entered therein a decree in manner and form as per the attached draft which has been approved by James O. Murfin, attorney for the Detroit City Gas Company.

Second, that the case pending in the United States District Court, respecting a rental charge, should be terminated by the entry of a decree therein in accordance with the attached copy which has been approved by Attorney Murfin on behalf of the Gas Company.

We, therefore, recommend that your Honorable Body adopt a resolution directing this office to enter these decrees in the respective cases.

Respectfully submitted,

RAYMOND J. KELLY,
Corporation Counsel.

JAMES H. LEE,
Special Assistant Corporation Counsel.

STATE OF MICHIGAN
IN THE CIRCUIT COURT FOR THE COUNTY OF WAYNE,
IN CHANCERY

CITY OF DETROIT, a muncipal corporation of the State of Michigan.

Plaintiff,

vs.

DETROIT CITY GAS COMPANY, a corporation of the State of Michigan.

Defendant.

No. 239,461

At a session of said Court held in the County Building in the City of Detroit, Wayne County, Michigan, on for hearing on this .....day

Present: Honorable Ira W. Jayne, Circuit Judge.

The above entitled cause coming up for hearing on this .....day of ....., 1935, and the Court having examined the pleadings and heard statements of counsel with respect to the issues involved and counsel having announced that the parties hereto have arrived at a compromise and settlement of the matters in controversy in this suit and wish to set forth in this Decree a preliminary statement in manner and form as follows:

Whereas, in the latter part of 1934 the said Company did announce a proposed increase in its rate schedule, which increased schedule went into effect on April 8, 1935, and

Whereas, the said City did seek in this cause to enjoin the promulgation of such rate schedule until the Court had passed upon the reasonableness of such rates, but notwithstanding which the schedule did become operative and go into effect on April 8, 1935; and

Whereas, during the time the City was preparing its evidence in this case, a possibility arose of a different solution of the Detroit gas problem as a result of many years of effort, which alternative is a plan for substituting for the present manufactured gas service, a service of natural gas of greater heating value and lower cost to the distributing company; and

Whereas, the City's objective, both in the present case and in the negotiations for natural gas, has been to secure the best possible service to Detroit gas consumers at the lowest possible prices; and

Whereas, the said Company has entered into a contract for the bringing of natural gas from the State of Texas, which it is anticipated will be available on or about July 1, 1936; and

Whereas, the introduction of natural gas in the near future will necessitate an entirely different type of rate schedule in any case, so that it now appears that the litigation of the manufactured gas rate is of only temporary interest; and

Whereas, the plan that has been developed for natural gas will also, by agreement, be applied retroactively to the limitation of earnings under present manufactured gas rates; and

Whereas, in mutual co-operation between the said Company and the City, a plan has been formulated for the natural gas service, based on broad basic principles of low promotional rates, and a financial incentive for the said Company to continue lowering the rates and increasing the efficiency of its operation as the business develops; and

Whereas, while this plan will operate greatly to the benefit of Detroit consumers, the fullest benefit will only be realized by the carrying out by the said parties of the spirit of the agreement in fullest good faith; and

Whereas, the plan briefly involves the establishment of a base earning sufficient to insure the Company's financial stability and credit standing, which will enable it to press vigorously the development of the new natural gas service, and with the increase of business the added profit above this base earning, under the plan, is to be divided with the domestic consumers in the form of an annual dividend pro rata to their use of gas; and the first additional profit of $550,000 being divided equally and thereafter the profits being proportioned three-quarters to domestic consumers and one-quarter to the Company; and

Whereas, the consumers thus become partners with the owners of the Company, sharing in all profits above the base earning; and

Whereas, this dividend effects a mutual incentive to the said Company and the consumers to increase indefinitely the efficiency of operation and the volume of business, and gives a practical limitation of earn-

ings and provides an immediate and automatic regulation of domestic gas rates by returning to the domestic consumers the larger share of any extraordinary increase of earnings; and

Whereas, the plan also involves a complete agreement that the Company will make full use of the principle of promotional rates to both industrial and domestic consumers, i. e., the well-known principle of increasing the volume of sales by progressively lowering prices, that has been so successful in developing the automobile industry; and

Whereas, this principle requires freedom and flexibility in changing prices as the business develops; and

Whereas, it is mutually recognized that the part the City has taken in working out this problem is a large factor in making natural gas available here, and securing it at prices very low, as compared with other large cities similarly situated; and

Whereas, this agreement is formulated on broad lines with a maximum of flexibility in its application, and it is an essential consideration that it should be carried out by the said parties in a spirit of fairness and good faith;

Now, Therefore, It Is Hereby Stipulated and Agreed between the parties hereto, by their respective counsel, that a Consent Decree be entered in this cause; and

It Is Therefore Ordered, Adjudged and Decreed as follows:

I.

The rate schedule for manufactured gas promulgated by the defendant Company on April 8, 1935, shall be subject to the limitation of earnings provided in the subsequent sections of this decree, governing a limitation and division of earnings between the Company and the consumers, and shall otherwise remain in full force and effect, as to each consumer, until such time as natural gas service has been effected, or until such time as same may be modified under the provisions of this Decree.

II.

It is mutually agreed that the defendant Company shall receive, as a base earning, the sum of $3,850,000 net revenue per annum as a return on its present property.

III.

To this base earning shall be added a sum equal to 7% of all net additions to its present investment in property and assets, used and useful in the natural or manufactured gas service in each fiscal year. In the event that the parties do not agree upon said net additions to present investment, the correct amount shall be determined by this Court upon application of either party, on a full and complete hearing thereon.

IV.

When the defendant Company's net earning in any fiscal year is in excess of the base earning, as above defined, the said excess or additional earning shall be divided between the domestic consumers and the Company in the following proportions:

The first $550,000 of such excess earnings for said year shall be divided one half to domestic consumers, as hereinafter defined, and one half to the defendant, and all additional earnings for such year in excess of $550,000 above the base earning shall be divided in the proportion of ¾ to the domestic consumer and ¼ to the defendant Company.

V.

This division to domestic consumers shall be in the form of an annual dividend, ascertained after the close of each fiscal year. Domestic consumers entitled to a dividend shall be defined as all consumers of gas for cooking or water heating, in single family or two family dwellings, or in single family apartments which are separately metered.

VI.

Said dividends shall be paid to such domestic consumers pro rata to the amount paid by them for gas purchased up to a maximum of 60,000 cu. ft. per year or its equivalent.

VII.

For the purposes of these dividends, the defendant Company is to establish a fiscal year closing approximately on the anniversary date of the beginning of natural gas service.

Earnings and dividends will be ascertained and announced as soon after the close of each fiscal year as practicable, and the dividends paid within ninety (90) days after the close of the fiscal year. Payment may be made by check to the order of consumer, or by a credit on the consumers' account, with the defendant Company.

All dividends not claimed by consumers within two years from the date the same become payable shall be barred and the sums so barred shall be added to the consumers' dividend fund, it being the intent and purpose of this agreement that consumers' dividends so used shall constitute a fund solely for the benefit of domestic consumers, as defined, and that no part thereof shall revert to the defendant Company.

VIII.

In determining the defendant's net earnings, for the purpose of this decree, charges against gross revenue shall be made in accordance with the defendant's present accounting practice.

IX.

The defendant's books shall be audited, for the purpose of verifying defendant's net earnings annually by a certified public accountant, to be agreed upon by the City and the Gas Company, and in the event the parties can not agree, the Judge having jurisdiction in this case shall designate a suitable firm of certified public accountants for this purpose. The cost of such audit shall be paid by the Company as an item of its operating expense.

X.

An initial schedule of rates for natural gas, in compliance with the basic principle of promotional rates heretofore described shall be promulgated by the defendant Company not later than May 1st, 1936.

XI.

The defendant Company is to reimburse the plaintiff for the cost and expense of its gas investigation during the current year.

XII.

It is not the intention of the parties to this cause that this decree shall in any wise alter or change any of the legal or equitable rights which either of the parties hereto may have as of the time immediately before the entry of this decree, and it is understood and agreed and so decreed that any and all such legal or equitable rights of either of the parties hereto shall continue and remain in full force and effect notwithstanding any of the provisions of this decree.

XIII.

Any of the terms of this decree may be modified or terminated by the Court upon application of either of the parties hereto and on a full and complete hearing upon said application.

XIV.

It is the intention of the parties hereto that this court shall hereafter be the forum for the determination of controversies which may arise between the parties hereto until such time as said parties shall discontinue the operation of this decree.

XV.

The court hereby expressly reserves jurisdiction to make such orders or modifications of this decree as, from time to time, may be necessary in the premises.

Rigid tests conducted in the laboratory of the American Gas Association prove that mechanical joints as made by members of The Cast Iron Pipe Research Association are bottle-tight under all working pressures. All are based on the stuffing box principle.

History has proved the material—we have improved the joint. What a combination of efficiency and long life! Here, for example, is a cast iron gas main that has been in service in Baltimore for more than 100 years.

CAST IRON PIPE

THE STANDARD MATERIAL FOR DISTRIBUTION MAINS

The Cast Iron Pipe Research Ass'n, Thos. F. Wolfe, Research Engineer, 1015 Peoples Gas Bldg., Chicago

Proved Endurance

Specify Recognized Relief Valves

That Meet Rigid Field and Operating Requirements

A. G. A. Listed "Patrol" Temperature and Pressure Relief Valves are Backed by a Real Pedigree

There's more to the manufacture of dependable water relief valves than the mere assembly of parts.

Only through the extensive experience gained by supplying over 500,000 "Patrols" to the industry during the past decade can relief valves be made to properly withstand adverse operating conditions, give satisfactory temperature and pressure relief, and afford freedom from service difficulties.

For proved, dependable water relief service specify "Patrol" Temperature and Pressure Relief Valves. They were the first devices to be Listed by the American Gas Association Testing Laboratory under the new A. G. A. and American Standards Relief Valve Requirements.

All "Patrols" are made under one or more of the following United States Letters Patent: 1692773, 1740420, 1740421, 1740422, 1864380, and other patents pending.

A FEW "PATROL" FEATURES

Rugged Brass Construction . . . Stainless Steel Pressure Spring . . . Special Non-Sticking Bibb Washer . . . Hexagonal Plunger for Six-Point Bearing and Effective Leak-Proof Seating . . . Graphited Asbestos Cap Gasket . . . Standard Settings 210 degrees and 140 pounds; Special Settings on Request . . . Laboratory Controlled, Accurate, Non-Deteriorating Alloys for Temperature Relief . . . Full-Flow Water Relief Action Provides High Hourly Btu Rating . . . Extra Temperature Fuse and Instructions With Each Valve . . . Consistent Relieving Performance and Close Reseating Range . . . Each "Patrol" is Subjected to Actual Operating Conditions and Carefully Tested at Factory.

Complete Line...Ten different types of "Patrols" are offered to you for application to all types of water heater storage tanks. A few are pictured above.

Write or wire today for complete descriptive and technical information on the available A. G. A. Listed "Patrols".

"PATROL"
REG. U.S. PAT. OFF.

THE PATROL VALVE CO. · 1933 W. 114th ST. · CLEVELAND, O.

SNAP! DASH! ENTHUSIASM! FIGHT! FIGHT!

R. A. Koehler
Chairman A.G.A.
Water Heating Committee

Is the Call To All Gas Sales Managers To Make the First National Automatic Gas Water Heater Sales Contest

(February 1-September 30, 1936)

A BIG SUCCESS

THE old cry—SNAP! DASH! ENTHUSIASM! FIGHT! FIGHT! of a famous football coach rings in my ears as I address this appeal to every gas sales manager in America to do his part to make the First National Water Heater Campaign a big success.

This old coach turned out championship teams. He coached some All American athletes. He believed what he said. He gave his all and he asked that others give the last ounce of their power and ability. He had the splendid passion to win—to succeed.

If we will carry that message into the 1936 National Water Heater Contest each day, each week, and each month from February 1 to September 30—if we will keep enthusiasm blazing alive in our hearts—if we will work to succeed—nothing can stop us from selling our quota of 300,000 automatic gas water heaters—from increasing our gas sales—from increasing the earnings of our salesmen—and from being among the prize winners of 1936.

There never was a time when it meant more to be a Sales Manager than now. This is our finest opportunity in years to go ahead and prove that gas is the superior fuel for heating water.

Let each of us pledge to go into this contest and campaign determined to do our part to double our automatic water heater sales in 1936.

Your committee believes that the gas men of America, more than any other sales group in our country, have the spirit, the courage, and the conviction which win victories.

Let's put the "Over the Top" spirit into every hour of every day from February 1 to September 30 to give Automatic Hot Water Service To Every Home.

Let's all fight—fight together with white hot enthusiasm to put this Automatic Gas Water Heater Campaign over.

One gas company registrant writes: "The plan deserves the unanimous support of every gas man, because of its single and clear cut purpose—to increase automatic gas water heater sales. It is practical—it is tangible—it sets a new sales mark for every selling outlet—it injects new sales vitality—it offers new sales aids."

May your committee count on your help with your leadership to do a real job?

R. A. KOEHLER,
Chairman,
Water Heating Committee.

Water Heating With Gas

Messages from Divisional Chairmen of the National Water Heating Committee

A. L. McKINSTRY

WE believe that Automatic Water Heaters are the key to multiple selling for 1936. We are setting our program this year to put over the largest Automatic Water Heater Campaign in the history of our Company. We believe that the Automatic storage heater offers the largest possibilities for load building of any individual gas appliance. Every gas salesman should be particularly interested in Automatic Water Heater sales this year. It offers him an effective means of doing real constructive work in showing the customer that the gas industry is a public servant that works for the direct benefit of the consumer. Salesman can have full confidence in the knowledge that he is doing his customer a real service when he sells an Automatic Gas Water Heater for greater efficiency in gas appliance as well as the convenience it affords.

During the years 1934 and 1935 our Company was in the midst of changing over from artificial to natural gas. This necessitated an intensive House Heating Campaign and made it impossible for us to adopt a balanced sales program. During the first six months of 1935 our Automatic Water Heater sales were rather negligible but we woke up to find ourselves confronted with an intense electric water heater program which offered the free loan of electric water heaters for an indefinite period and a special off peak water heating rate. This necessitated an immediate adoption of a plan which would effectively curtail their activities.

We adopted the Rental Purchase Plan and laid stress on the rental part of it, offering 20 and 30 gallon heaters on a rental purchase of 50 cents and 65 cents per month. We not only made this offer but we pushed it. Immediate results were forthcoming; sales began coming in at the rate of 10, 15 and 20 heaters a day. These Rental Purchase Plan sales have kept on coming ever since and our total for 1935 we discovered amounted to approximately 400 storage type water heaters and a nice increase in gas consumption, which tended to raise the valley from the peak established by our house heating load in the Winter.

Our 1936 program will be built around the Rental Purchase Plan and are setting our sales for the largest volume of water heating business we have heretofore experienced.

May I reiterate that all of us in the gas business can find a real appliance market and a real sales volume each month in 1936 by the Automatic Gas Heater route.

A. L. McKinstry
Cedar Rapids Company,
Cedar Rapids, Iowa
Chairman Div. 8

H. E. DAVIDSON

IN GENERAL, water heater sales in the Eleventh Division, comprising California, Nevada and Arizona, showed a marked increase in 1935 compared with the previous year; in San Francisco, for example, sales of automatic gas water heaters were 39% higher in 1935 than in 1934, while in Los Angeles, with 18,393 permits issued for all types of heaters in 1934 and 24,916 the following year, a gain of 35% was made. Other areas showed comparable increases, while some made more nominal gains.

Fortunately, sales are continuing to follow this strong upward trend, so that the outlook for 1936 is most favorable. Local efforts, synchronized with the national campaign, are expected to maintain this movement, so that this year's sales will without doubt be considerably greater than those of 1935.

Whatever gains in gas water heater sales are shown in 1936, however, must be made against increasing electric competition, particularly in Southern California, Nevada and Arizona, where power from Boulder Dam will be distributed. Initial delivery of electric energy from this project will probably be made this year, and electric utilities, both privately- and publicly-owned will undoubtedly intensify their present efforts to build up the market for contracted power through the promotion of electric water heaters and ranges. Because of the desirable load characteristics of off-peak water heating, a determined drive will unquestionably be made to obtain that class of business, to the detriment of

gas heating sales.

This competition, although severe, can be met successfully through the application of effective rates, and the close cooperation of the three agencies interested in the promotion of gas water heating—dealer, manufacturer and utility; and it is through these means that the gas industry in the area affected intends not only to maintain but to increase its business.

H. E. Davidson
Southern California Gas Co.,
Los Angeles, Cal.
Chairman Div. II

THE problem of selling gas for water heating in Division 5 of the American Gas Association varies from towns and cities in the upper portion of North Carolina, South Carolina and Georgia, where extremely low water temperatures are occasionally confronted, to Florida where "Old Sol" himself is a competitor, several apartment houses and hotels being furnished with water heated by sun coils on the roof. The B.T.U. value and price of gas also varies from certain towns in Georgia and Florida which have natural gas to the manufactured gas properties in the remainder of the area. With such wide diversification of conditions, there are necessarily a number of different approaches to the water heating problems.

One principle which I believe is more fully appreciated in these states than elsewhere is that we must look to the lower income groups for our increase in water heating business. Most of the properties in our area have a very healthy saturation or gas water heating in the higher income groups. The potential load in the lower income groups is tremendous and the load building success of water heating activities will be to a large extent dependent upon the success the properties achieve in selling smaller amounts of hot water at a price which the customer can afford to pay. This price is necessarily composed of two parts—the cost of gas and monthly payments on the equipment, both of which must be within the ability of the customer to pay. These are problems which merit and which are receiving the earnest efforts of all gas companies' executives in this area.

In spite of our varying conditions, there is one thing which all of our properties in Division 5 have in common and that is the tremendous amount of enthusiasm for the National Water Heater Sales Campaign. All properties with whom we have been in touch are planning to enter this campaign wholeheartedly and are giving a great deal of thought to their water heater plans for 1936. They are filled with the determination to make 1936 one of the best years that we have ever had for the sale of gas for water heating. These companies realize and appreciate the very fine job which those responsible for the campaign have done in initiating the first concerted national drive for increased water heater sales. This movement is one of the most important things which has ever happened in the water heater industry and each and every property is planning to take full advantage of the opportunity which is afforded them.

J. W. Lea
Atlanta Gas Light Co., Atlanta, Ga.
Chairman Div. 5

G. B. BUCK

SINCE the first sale of an automatic gas storage water heater in this territory in 1910, the sales efforts on this appliance have been consistently increased and a continuous growth in public acceptance has resulted. Even during the past six years annual unit sales of gas storage water heaters have declined less than those of other gas appliances and the total number in active service has consistently gained each year.

In 1935 sales of gas storage water heaters in this district were made to about 3% of all residential meters, representing an annual unit volume approximately equal to that obtained in 1929 and bringing the saturation of this appliance to over 35%. Of the remaining residential customers, approximately 95% are users of non-automatic gas water heaters.

To obtain volume sales of storage water heaters in 1935, nearly all companies in this division conducted intensive sales campaigns making use of widespread advertising, sales contests, employee selling activities, special terms and reasonable allowances for old equipment. In addition to the usual seasonal campaigns, most companies of this district conducted a fall activity from September to December inclusive, the results of which definitely proved that intensive water heater sales activities can be successful in what is generally considered the "off season."

Although many companies featured one moving of equipment purchased by tenants, and some companies offered limited free trials, practically all avoided direct rentals. Removal and return of equipment from all causes including repossession of heaters sold in prior years was less than five per cent.

The 1936 budgets for the sale of gas automatic storage water heaters in this district anticipate the sale of over 4% of the residential meters, representing an increase of about 33% above the highest previous year's sales. General continuation of intensive sales efforts and participation in the national A.G.A. Contest are planned.

In addition to utility sales activities, greater efforts will be made to capitalize on the possibilities of dealer sales. Plumbing contractors will be urged and assisted to train their journeymen in sales and to provide a bonus schedule, similar to that used by utilities for employee sales, that will induce the mechanic to take full advantage of his sales opportunities. Merchandising dealers such as department, furniture, and appliance stores will be shown the merchandising opportunities existing in the sale of an appliance that has definite public acceptance, and offers satisfactory margins and turnover with practically no service difficulties. The sales efforts and advertising of these dealers will be correlated with that of the utility to secure maximum public attention with resulting increases in business for all outlets.

With public acceptance established, utility sales activity spurred on by the A.G.A. Contest, and the possibilities in dealer sales recognized, record sales of automatic gas storage water heaters in this district for 1936 are assured.

G. B. Buck
Public Service Co. of Col.
Denver, Col.
Chairman District #9

THE old doctor removed the clinical thermometer from the patient's mouth, leaned back in his chair and his eyes twinkled knowingly, as he said, "I'm going to give you a tonic, young man. Take it as prescribed. I want to give you some good advice too. It'll do you as much good as the medicine; in fact, it's a part of the prescription. You must make a game of your work. You're in a rut. It's not uncommon; we all get that way at times. Try something new, something interesting. You'll be surprised how much easier your work will be when you're interested in it."

There is nothing particularly new or unusual about this old doctor's advice to his patient. In fact, just this kind of honest, straight-forward diagnosis and recommendation has helped many a worried man work out a program for himself and achieve health and happiness—why not the Gas Industry?

Gas Water Heating is not a new service. For years, gas companies all over the country have offered automatic gas water heating equipment to their customers. Each company has had its own peculiar problems. Some, particularly those distributing natural gas, have done a presentable job. Others, handicapped by relatively high rates, have battled with severe competition for the water heating loan, spurting ahead for a time, then doggedly hanging on worried—but hopeful.

The American Gas Association, through its staff of "doctors," the Water Heating Committee, prescribe a tonic for gas companies all over the country—the 1936 Contest to sell 300,000 new Automatic Gas Water Heaters. To be sure, it is simply the tonic; but if it is taken faithfully and enthusiastically as prescribed, it will do wonders for gas water heater sales throughout the industry. Those companies, who believe that their water heater business is healthy, may profit by this tonic as well as those who are definitely ailing in the water heater department. It is a tonic for the well and the sick alike.

One thing, however, is certain; wholehearted cooperation from every gas company is vital to successful results from this or any other plan to promote gas water heating sales. The contest plan has been successful in the promotion of gas refrigeration and gas range sales. It can be equally helpful in the sale of automatic gas water heaters—if it is put to work. Cash prizes totaling thousands of dollars, advertising and display suggestions, sales promotion material, all play a part in this campaign to make a game of the business of selling gas heated water to the American Public; interesting to the players and profitable to everyone.

If you have not signed up for the contest, get out the prospectus

R. E. WILLIAMS

(you'll find it in the pile of catalogues, folders and papers that you laid aside for future reference) and read it over. The closing date has been extended to February 15th, so you still have time to sign up and join with other far-sighted, progressive gas companies in keeping out of "hot water" by selling more of it (gas heated) in 1936.

R. E. Williams
Binghamton Gas Works,
Binghamton, N. Y.
Chairman Div. 2

THE need for automatic water heater business is apparent to all gas companies. In New England during the past two or three years some definite action has been taken to step up this profitable load building business.

With lower incomes and present day competition, it is necessary to lower rates in order to go after the mass market water heater business. During the past two years it has been very noticeable that the utilities selling automatic water heaters were the ones that had an attractive water heating rate.

In 1934 the four largest gas companies or syndicates got together and agreed to spend a definite sum of money for a Metropolitan newspaper campaign on automatic water heaters. These four companies comprise approximately 80% of the domestic meters in New England. This seems to be a step in the right direction and to call to the attention of the people, through these newspaper advertisements, the many advantages of automatic hot water service. These advertisements were run during the spring and fall and covered the essential points from the standpoint of customer-user interest. A special low price was adopted by the four companies as a leader which had a good appeal. The new rates, together with approximate cost of operation, were also stressed in the ads. Ruud products were used throughout the campaign, and the subject of new and efficient water heaters was broadcast through the press.

Gas water heaters, like many other gas appliances, have made definite forward steps in both design, appearance, and overall efficiency. There are automatic water heaters now on the market which will operate comparable to and, in many cases, exceed other appliances using competitive fuels, both from the standpoint of service ability and cost of operation.

There is no question in the minds of gas men in New England that 1936 will be an exceptionally active water heater year. General business is constantly improving. There will be more attention by the public to demand, and have, more conveniences. There will be government publicity on home modernization which will have its effect.

The American Gas Association water heater sales contest will do much to stimulate action on the part of gas companies in arranging their water heater campaign in line with the contest as outlined, and this will certainly be instrumental in promoting additional water heater business.

Gas companies are expected to spend more money for advertising this year.

With the introduction of conversion heaters, the gas company, for the first time, will be in a position to direct its efforts on water heaters to all classes of customers and particularly the so-called mass market class, because of the first low cost and low operating cost.

There is an irresistible desire on the part of the people everywhere for something better. By means of the long terms now available to the public, together with the type and size heaters for every purpose, there should be a decided increase in water heater business in New England this year.

Cyrus Barnes
Chas. H. Tenney & Co.,
Boston, Mass.
Chairman Div. 1

This Rental Mania

By

Charles W. Merriam, Jr.

Div. Commercial Manager, Roanoke Gas Light Co., Roanoke, Va.

NEED a Pinkerton Detective Agency be employed to discover the widely known secrets of why automatic gas-fired water heaters are not generally being sold in quantities commensurate with the existing public demands for the service? Is the gas industry's perspective not blinded—or perhaps merely colored—by supposing facts to exist in accordance with our desires? Much valuable time has been wasted in lamenting that things are not as they ought to be. By allowing our wishes to act as substitutes for the real facts, our efforts to satisfy this public demand for hot water service have fallen far short of obtaining potential saturation. As distressing as the truth sometimes is, we are best fortified by first learning and weighing actual market conditions both economic and psychological, real and imaginary. What *is* and not what is *supposed to be,* is the essential goal being sought here.

To lend ear to the voice of that temperamental, complaining and cantankerous specie of *homo sapiens* commonly dubbed the retail salesman, might on the subject of automatic water heating prove both disconcerting and illuminating. And yet where there is so much smoke, reason dictates there must be at least a spark of fire. Why is it that executives, recognizing the need for more and yet more water heating load, cause sales campaigns to be planned with worthy incentive, appropriate color, advertising power and other prerequisites and then facilitate the execution of these plans with equally advisable finesse and persistence, only to witness a series of well known "flops?" The industry is not misled by unwarranted optimism in their convictions that the product itself is right (or shall we say better than it was?), that the rates are a bargain to the purchaser and to the seller, and that the major portion of the public have the necessary money to buy. So what? The problem is not so much what we know to be the basic, fundamental competitive circumstances, but rather what the *public thinks* to be the facts.

CHARLES W. MERRIAM, Jr.

Chairman Division 4 National Water Heater Campaign

Listen to the sales department murmurs from the "firing line" summarized in a tale of woe whose four particulars are—and in capitals:

1. Non-home owners are virtually "out" as prospective purchasers.
2. Customer fear of operating costs looms large.
3. Initial investment in too many cases is insurmountable.
4. Appreciation of benefits not widespread.

The doorbell pullers have almost worn this record out in the playing thereof. Perhaps the "heavy thinking" executives have become calloused to these salesmen's pleadings through such constant repetitions, complacent in their belief that their circle of immediate friends constitutes a cross-section of humanity. And yet the campaign "flops" still stand even when the other two major domestic appliances, viz., ranges and refrigerators, have found a comparatively more ready market. There must be a modicum of truth in these sales department assertions. Even alibis have more of a foundation than mere imagination. Let's see.

Home Owners

Home owning—ah, that castle-in-Spain vision of dreaming, building youth and an altruistic Administration—a wholly delightful and worthwhile yearning born with each generation of mankind but, unfortunately, frustrated as the pace of civilization advances. Today we find hardly one-half, scarcely 50%, of the residential homes in gas-served American cities owned by present occupants. The much trumpeted Depression found an almost overwhelming number of home titles passing to loan agencies, insurance companies and speculators. A decided tendency is observable in this day of mergers and consolidated "bigness" to find a greater proportion of our population quasi-transient—here a couple of years, then moving elsewhere. Apartment "cliff dwellers" and double houses have noticeably increased. These factors and others have contributed to the diminution of the old-fashioned conception of home ownership.

This trend of a lessening proportion of "home owner occupants" has a lot to do with the sale of automatic water heaters. In the first place, non-home owners are prone to regard the appliance itself as a permanent improvement to the prop-

erty, in fact, under most state laws anything attached to the plumbing is deemed to be a part of the real estate proper as legally distinguished from personal property in the latter of which categories the range and refrigerator are included. The conception is wide-spread that the installation of an automatic water heater is a time consuming, and fairly expensive job. Whether we like it or not, the non-home owner looks askance at the idea of possessing what is classified according to general belief as at least a relatively unmovable apparatus. Next, the actual absentee owner of property, realizing that the demand for automatic hot water service has not yet crystallized preceptibly, figuratively speaking, sits tight. To say that as between lessor and lessee an impasse on the subject of water heater equipment exists, is rather common knowledge. Added to this, the scale of present-day monthly dollar rents received for homes is such that there is some question as to whether the landlord could make the required cash outlay for equipment investment even if he were so disposed and the occupant insisted. This plank out of the salesman's platform that 50% of the total market is virtually uncultivatable on this one score alone of non-home owners, is certainly not entirely a mis-statement of market conditions.

Operating Costs

Customers' fear of operating costs, particularly in manufactured gas districts and in low inlet water temperature areas, has not been imaginary. Back in the days of what is termed in some quarters "Black Republican Prosperity," the gas utilities aided and abetted by the manufacturers, foistered off on the public a goodly number of excessive size heaters (both as to rate of Btu. input and storage) for the most part in the upper income brackets of society. This coupled with some ill-informed installation technique, high storage temperatures, lack of consumer education and other lesser factors combined to create a number of 10 and 15-dollar gas bills for water heating. These crimes were indubitably perpetrated more through ignorance than through maliciousness. As long as money literally grew on trees, the protests were but mild. Came the day of judgment when realization dawned that stock markets did not create real values and the hue and cry over those "monstrous" gas bills culminated in automatic water heater "turn-offs" and "removals" in distressing numbers. Although rapidly becoming a thing of the past, public conscience still harbors lingering doubts as to the economic propriety of "this money-consuming-beast." The last three years have happily seen advancements through force of necessity in thermal service efficiencies of the water heater unit from 35% and under up to as high as 67% and a corresponding broadening dissemination of installation information so that today a customer

can procure delivered hot water on a dollar cost, in terms of gallons per degree rise, for virtually half of the 1932 and before era. On top of this, many sane rate alterations have been initiated for further reducing the cost of this service—all in all a most healthy situation boding much good. BUT this state of affairs has not yet filtered down to the common mind. Suspicion and distrust are still rampant with the average customer. Being on the defensive, the burden of proof lies squarely on the gas industry's shoulders—there still is that "fear of operating costs" which must be successfully combatted. Score another well grounded alibi for the audible salesman.

Initial Investment

The subject of initial investment is always tough to wrestle with—in fact, if it were not tough there would be little need for salesmen, because the product would almost, but not quite, sell itself. Nevertheless, the price is indubitably not altogether a "give away" and two-fisted salesmen scarcely have any desire for such. The margin above bare food and shelter (and taxes) left to the average Mr. Citizen causes that "$60 and up" for an automatic water heater to appear rather formidable unless terms of a most inviting character are offered. Don't forget also that "the 400" are trifling with oil-fired central house heating having integral hot water facilities and coal stokers similarly equipped whereas Mr. Workman still has access to those "$30 and under" laundry or "jack-pot" stoves not to mention the humble tank heater. All this is topped off by the government FHA "catch-'em-before-they-die" financing plan (nothing down and 48-month terms) which leads to Mr. Wage-earner shrugging his shoulders with indifference at our own time honored "10% down and 24 months to pay" schemes. Perhaps the salesmen are due a "draw decision" on this "first cost" theme, but at any rate, serious meditation respecting reduced initial investments and the availability of longer terms, particularly the latter, are of a high order of importance.

Benefits

The fickle and indifferent public have always been tardy in their appreciation of the "truly good things in life." No product in the history of man has been widely sold irrespective of its merit without either genuine advertising power or well-trained, skillfully handled man power—preferably both—pounding, continuously hammering on the consciousness of the buying masses. Can the Gas Industry honestly lay claim to having complied with this accepted selling dictum in both respects? Have our advertisements been attention demanding to catch reader interest? With the use of attractive art work and good advertising layout, have we driven home the virtues of the service offered or have we harped on price "a la cut-rate drug store" methods? "Price" selling always lands a few suckers. Advertising to get creditable selling results must strike a fundamental note of human interest, must reach the common man in his terms of every-day living. Stilted avowals of our superiority will persuade few to purchase. A broad, sustained public buying demand will come from boldly and skillfully evaluating and praising automatic hot water service in the public press but with price

subordinated and modern efficiencies properly emphasized. Salesmen are perhaps right in believing that the gas industry has not gone far enough in cultivating public interest in the service.

Have we studiously and enthusiastically instructed our personnel so that in water heater contracts with the people we might be said as an industry "to have it on the ball?" Instructions, selling tools, and stimuli must be continuously fed to retail salesmen to raise their plane of effectiveness. Have we fed our men enough helpful and digestible material on what uses hot water service can and is being put to in the modern American home? Have we prepared our "firing line" representatives to sell a hot water service or an apparatus? Much has yet to be accomplished in this respect.

What are our salesmen in the field really selling against?—read the newspapers, bill boards and periodicals! Automobile, cigarette, cosmetic, theatrical, wearing apparel "come ons" cleverly conceived and brilliantly paraded before the credulous "readers and glancers," have erected larger barriers in the path of gas company representatives than have competitive water heater salesmen. The battle for the customer dollar concerns much tougher nuts than the coal, oil, and electric man. Could these tremendous "pleasure" industries have achieved present greatness without grade "A" advertising—it is very doubtful. And yet, automatic gas-fired water heaters are more than a match in fundamental, hard values for most of the superfluous frills of the modern tempo. In our modern self-action service we offer a most imposing array of both practical worth and luxury *par excellence*—list 'em—labor-saving of a higher order, luxuriousness surpassing ancient Rome, health-protecting and health-stimulating, beauty-enhancing, absolute safety, and a most economical operating cost measured in pennies per day—in short "we have what it takes." Yet what is the missing link? We need a happier combination of a more vital human advertising of the service *per se* coupled with a better informed, harder-hitting sales organization. An excess of modesty, reticence, caution have submerged our essential virtues.

Rental a Mania?

In the early part of this century the gas business had virileness, what we now call "pazzaza." How else did our industry rise from obscurity to its present magnitude except by a spirit of business adventure tinctured with sound judgment. We sorely need to contemplate and refresh ourselves at the wellsprings of our forerunners. We need faith in the worth and in the acceptability of our services carried into action. The public?—it demands a convincing demonstration that we're right, incontrovertible proof that we deserve a share of its income.

Is this recently witnessed but definite trend towards the rental of

Water Heater Rental Contract Form

COMPANY NAME (LESSOR)
CITY STATE

LEASE OF EQUIPMENT

Date——*Feb. 2, 1935*——

Name of Lessee——*John Doe*——Phone——*2-6952*——
Mailing Address——*100 Blank St.*—— City——
Delivery Address——*same*—— City——
Date Promised——*Feb. 4*—— Key at——
Service in *V* Piping in *V* Take with——Order No.—*1000*—
Meter in *V* Size of stub in——*1¼"*——Delivery only
Meter Order Attached—— On existing main *V* Deliver and install *V*
Replacement——*tank htr.*——

QUANT.	ARTICLE	STOCK NO.	AGREED VALUE
1	*30 gal. storage—9000 Btu.*		*$89.50*

The undersigned lessor and lessee hereby agree as follows:

(1) The lessor hereby leases to the lessee and the lessee hereby leases from the lessor the above described personal property for a term of *60* months from the date hereof for a total of *$89.50*, payable as follows: Cash *$1.00*, covering equipment installation charges and rental for *1* month, receipt of which is hereby acknowledged; then *$1.50* per month, the first becoming due on the 10th day of the *next* month following the date hereof and one on the 10th day of each succeeding month thereafter until the full rental above stated shall have been paid. At the option of the lessor, the monthly payments of rental may be required on the date that lessee's monthly gas service bill will be payable.

(2) The lessee shall have the right at any time to terminate this lease, provided there is then no subsisting default hereunder, upon giving the lessor thirty (30) days notice in writing of lessee's intention so to do. Thereupon all rental to accrue after such termination shall cease.

(3) The lessee is hereby given the option to purchase the leased property at any time during the first year of said term at a discount and trade in allowance totalling *$15.00* of the then unpaid and unaccrued rental for the unexpired portion of the term; and to purchase after the first year at a discount of *10%* of the then unpaid and unaccrued rental for the unexpired portion of the term.

(4) Should the lessee fail to pay within ten (10) days after due date any monthly payment of rent or make other default hereunder, then in either of such events, but not otherwise, the lessor shall have the right without notice or demand therefor to remove the leased property from the premises where installed and the lessor and its agents are hereby authorized to enter such premises for such purpose. Upon such removal, all rights of the lessor hereunder shall cease; and all the lessee's obligations hereunder, except for accrued and unpaid rental payments and damage to said property, shall thereupon cease also. The lessor shall have the right to inspect the leased property at all reasonable times.

(5) The lessee agrees, upon the termination of this lease, except in the event of purchase by the lessee of the equipment, to deliver up said equipment to the lessor in good order and condition, usual wear and tear excepted; to indemnify the lessor against loss or damage thereto by fire, theft or otherwise; not to assign this lease without the written consent of the lessor; not to remove the leased property from the premises where originally installed without like written consent; and not to use or treat the leased property or any part thereof for any purpose other than for which it was originally intended or authorized.

(6) The lessee agrees to pay the rent reserved hereunder which shall accrue before termination hereof or removal of the leased property and waives homestead exemption as to this obligation.

(7) It is agreed that this lease is the full and complete agreement between the parties and that no salesman or agent of the lessor, except its manager or auditor, is authorized to vary its terms in any particular. This agreement is not binding upon the lessor until signed and approved by its manager or auditor.

(Signature of Lessee) ——*John Doe*——
(Signature of Lessor) ——

By——

Approved by ——
Manager
Auditor

The undersigned, owner of the premises where the above described personal property is or is to be installed under the terms of the above lease, hereby consents to such installation and agrees that said personal property may be removed at will from said premises without objection from the undersigned.

Owner of Premises

Italics indicates part filled in by salesman taking order.

automatic water heaters a mania? Those that haven't tried it say "yea" —those that have experimented, pronounce an emphatic "nay." Many of the violently conservative gas companies hold up their hands in horror at the idea. Manufacturers not actively engaged in furthering such rental projects are "biting their lips and snorting" to their own sorrow over business going elsewhere. So much has been published and otherwise circulated throughout the industry that no longer does doubt prevail as to either the effectiveness from a selling angle or of the basic soundness and profit from the treasurer's point of view. The accompanying contract form is a rental instrument in actual use for two years in a group of manufactured gas properties. Unit volume has been tripled and quadrupled, heater repossessions as a percentage of installations are no longer (in fact in many instances less than) on straight, conventional conditional sales contracts.

The rental program has had one salutary effect on the installation department, namely, that in order for the heaters to "stay put" the installation must be not merely good but excellent. In this modern generation even mail order houses, ballyhoo and live by the battle cry, "satisfaction guaranteed or your money back." Every utility in practice lives by this principle, but how many so advertise? Rental maniacs are reported to have clearly established that "here's a way out." And the result observed has been, the public is *buying* instead of being *sold*—that means worthwhile volume.

Weigh the four essential salesmen's field findings aforementioned. The rental plan answers and breaks down each of these customer-obstacles, real or imaginary as the case might be, summarized as follows:

1. Permits non-home owners (or landlords) to secure self-action hot water service without fear of being stuck with a relatively immobile apparatus.
2. Removes customer objection arising from a fear of possible operating costs.
3. Spreads out the initial investment so that customer can afford to use while the company receives both a reasonable rental and a saleable gas revenue.
4. Allows customer evaluation of performance benefits in the home without a questionable gamble on his part, the only wholly satisfactory demonstration.

The rental program has the not inconsiderable advantage of causing the salesmen to either "put out" or "get out."

Analyzed to its irreducible elements the rental plan appears not as a mania but as a sound, workable program. To adopt such a method requires not alone freedom from the shackles of repressive convention but also a firmly rooted belief in the intrinsic value of the service at the price offered. Our quite justifiable mania for *net profit from all operations* might yet develop to the extent of seeing the rental program widely adopted.

Home Service—An Aid to Water Heater Sales

Helen A. Smith

Home Service Director, Rochester Gas and Electric Corporation
Rochester, New York

HELEN SMITH

AS you home service directors know, the different A. G. A. committees are making extensive plans to have this year's activities better than ever. The Home Service Committee of the A.G.A. is co-operating in these plans. As a representative of that committee I am enjoying the privilege of working with the Committee for the Water Heater Campaign.

This Water Heater Committee, as you will see when you study the plan book, has laid out a most ambitious program, considerably more comprehensive than has been attempted before, and which is being enthusiastically received.

When you receive the copy of the plan book you will find a section devoted to suggestions for home service activities. We tried to include ideas that have been successful in different parts of the country and in different sizes of companies and departments. It is not, of course, any intention of ours that any one home service department could do everything. We hope, however, that some one suggestion will lead to an activity that will be better than anything anyone else has done before.

If you do not have group meetings in your home service rooms, perhaps you can arrange co-operative demonstrations with department stores or other dealers of equipment.

Whatever plans you make, it would be advisable to keep a fairly complete record of your activities. Maybe your company will win one of the prizes, then you will want to show what you have done that has contributed to your company's success.

More material such as skits and detailed demonstration plans will be made available by the committee for those home service directors, who, working alone, just do not have time to prepare the details of everything that comes along.

The woman who keeps house is the person most concerned about hot water in sufficient quantities and we women in the home service departments are the logical individuals to give the homemaker the information she needs. The more interesting and varied methods we can devise for dispensing the information the more water heaters will be bought and enjoyed by our customers—WE HOPE.

AMMUNITION

FOR PRIZE WINNERS

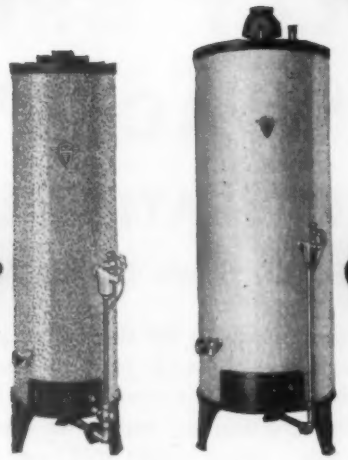
IN THE AUTOMATIC GAS WATER HEATER

PRIZE CONTEST

sponsored by the Ass'n of Gas Appliance and Equipment Manufacturers*

AGP REGULAR
automatic gas-fired, storage
WATER HEATER

Multiple flue type, completely automatic. Baked enamel steel jacket, tank of galvanized heavy gauge steel or strengthened copper. 5 sizes, 20 to 75 gal.



THE DICTATOR
automatic gas-fired, storage
WATER HEATER

Single flue type, completely automatic. Baked enamel steel jacket, tank of galvanized heavy gauge steel or strengthened copper. 4 sizes, 15 to 40 gal.

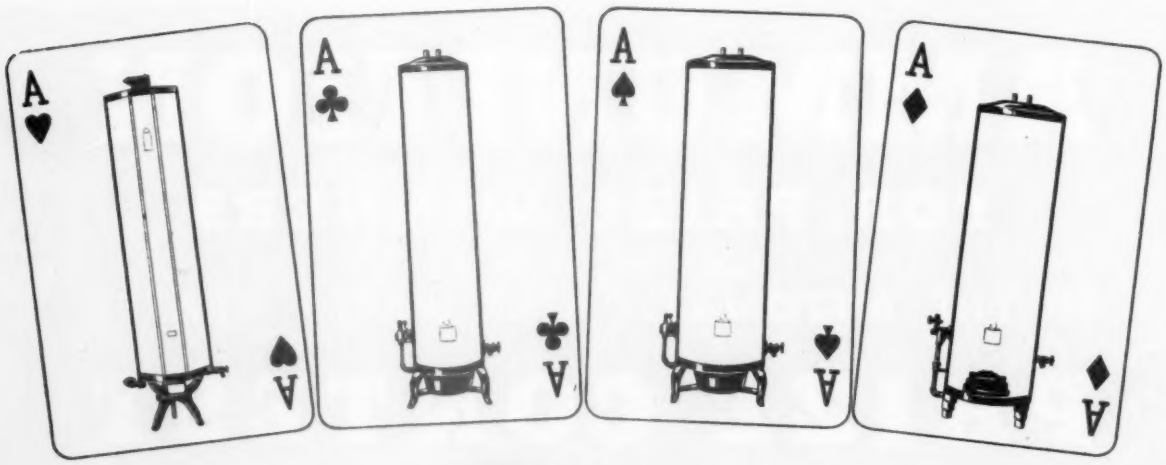
*Have you heard the big news? Thousands of dollars in prizes every month to you and your salesmen for selling gas water heaters. The biggest promotion event of its kind. Write for details today if you have not already received them.

Be right up in front when the band starts playing and the prizes are being awarded in the big Prize Contest. Concentrate on AGP gas-fired Water Heaters — and you'll pass your quota easily. Feature them — and they'll practically sell themselves; for they have every feature and every advantage that makes people want automatic hot water with gas.

What's more, they'll *stay* sold. Dependability is built into them. The name on the emblem that each of them carries is a guarantee of honest workmanship that will back up your own good reputation. Get the business that's coming your way. Find out about these business-building, sales producing automatic gas-fired water heaters. Write today for the complete details.

AMERICAN GAS PRODUCTS CORPORATION
DIVISION OF AMERICAN RADIATOR COMPANY
40 WEST 40TH STREET · NEW YORK, N.Y.

AGP gas-fired WATER HEATERS



PLAY HANDLEY BROWN'S "4 ACES"

TO WIN WATER HEATING LOAD IN 1936

From Left to Right, these LOAD WINNERS are:

MIRRO - SHELL — The newest ace to fill the winning hand. A complete all-in-one unit converts the old tank into an automatic heater at surprisingly low first cost. Here's mass appeal at its best. No condensation; no circulating, liming or sediment troubles. Efficiency equals factory-built job. Input 4,000 BTU per hour.

NUMBER "30" — The pioneer U-tube type, low consumption heater that helped save the day for domestic load. Low selling price makes it "easy to buy, easy to use." Input 4,500 BTU per hour.

NUMBER "50" — The partner to "Number 30" with capacity for larger requirements. Input 6,500 BTU per hour.

NUMBER "45" — Large demand, U-tube type, fast recovery (input 24,000 BTU per hour) meets need for large demands with efficiency and economy that keeps it in service.

Please yourself by pleasing your customers . . . Handley Brown does it with high efficiency and full gallonage at uniform temperature.

As a gas man says: "We now sell *a lot of gas* by selling a little to a *lot of people* we couldn't sell any to before." Let us show you.

Write for details, prices, terms.

HANDLEY BROWN HEATER CO.

JACKSON, MICHIGAN

Water Heating Promotion Helps

Available for gas companies and plumber dealers in National Automatic Gas Water Heater "Clean Up" Drive

Registration extended to February 15

THE National Automatic Gas Water Heater Sales Contest Committee of the A.G.A. have issued a comprehensive portfolio crammed full from cover to cover with sales aids to help sell 300,000 automatic gas water heaters in 1936. Several thousand have been mailed to gas companies. The material is available to all gas companies regardless of whether or not they have registered in the contest. Also all material is available to all gas companies whether or not they are members of the American Gas Association.

The purpose of this portfolio is to provide a complete advertising and selling plan to the gas company without its own advertising department. Also to supplement the activities of larger gas companies with materials that would be too expensive if individually prepared and in quantities for local use only.

The material included consists of the following:

Newspaper Mats—A series of six attractive advertising illustrations feature—the cost appeal—the convenience appeal and a combination of both copy suggestions are also supplied so that one might use the copy as is or with local copy that may better fit the situation. A coupon slug trade mailing the campaign is also provided. This slug reads Faithfully yours, 24 hours a day, Automatic Gas Hot Water Service.

These illustrations are supplied in 2 x 3 col. size. The coupon is suggested to provide requests for copies of specially prepared folders described below.

Special comparative cost folders and M.I.T. test sheets:

A series of four striking folders in color are provided to support the M.I.T. test sheets. These folders show that gas is low cost. These four folders compare the cost of gas fuel with the pot stove, the furnace coil, oil and electricity. Used with the actual cost facts as shown by M.I.T. figures they form a powerful selling combination.

Display suggestions and material provided:

Companies using outdoors advertising will find two dramatic outdoor poster suggestions. One features the Bugaboo cost, the other shows joys of ample hot water. Four selected window displays that have proven their effectiveness are shown.

The following display material is available:

Window Streamer

A handsome 32x12" streamer in full color. Shows the joys of abundant hot water and tells how little it costs with a *new* automatic gas water heater. The committee recommends generous *Decalco-*

75 CASH PRIZES TOTALING
$10,000.00
HERE'S HOW TO ENTER THIS CONTEST
HERE'S HOW THE $10,000 PRIZE MONEY WILL BE DIVIDED
HERE ARE SOME OF THE SELLING AIDS AVAILABLE IN THE $100,000 PROMOTIONAL CAMPAIGN—PART OF THE BIGGEST DRIVE EVER LAUNCHED TO SELL Automatic Gas Water Heaters
hot water anytime automatically WITH GAS
Register TODAY!
THE CONTEST RUNS EIGHT MONTHS—FEBRUARY 1 to SEPTEMBER 30, 1936 (midnight) Make your drive successful—profitable
REGISTRATION IS FREE TO PLUMBER-DEALERS Register Today!
YOUR MANUFACTURER OF A.G.A. Approved Water Heaters has many additional and effective selling aids available. Use them to boost your sales. Write him now for complete details. Thousands of dollars will be spent in every city and town supplied with gas to sell you more on the comforts, convenience and economies of modern Automatic Gas Water Heaters.

mania distributor of this streamer to plumber dealers.

Decalcomania

A symbol of perfect hot water service is provided in the form of this 12″ decalcomania in brilliant color. It sums up the story in a few words—Hot Water anytime automatically with gas.

Permanent Metal Sign for Windows

Tells a story of economical gas service for cooking, refrigeration and water heating.

Attractive Rotogravure Newspaper "Hot Water News"

It pictures the joys of automatic gas hot water service. It hammers home the story of perfect service at low cost.

Plan Book

Crammed full of useful suggestions on sales plans contest, prospect building sales education, employee selling and home service tie up.

Push Automatic Gas Water Heaters in 1936
THERE'S A POWERFUL $100,000.00
NATIONAL SALES-DRIVE READY TO GO—
Ready to make the market grow—
backing up this
BIG PRIZE-CONTEST FOR PLUMBER-DEALERS
THE MOST CONVENIENT WATER HEATER
THE MOST FAITHFUL WATER HEATER
THE MOST DESIRED WATER HEATER
THE WATER HEATER THAT IS ECONOMICAL TO BUY
THE WATER HEATER THAT IS ECONOMICAL TO RUN
and the prize contest money is
too good to overlook
REGISTER IN THE PRIZE CONTEST—IT COSTS YOU NOTHING
USE THE POST CARD IN THIS ANNOUNCEMENT
PUSH AUTOMATIC GAS WATER HEATERS IN 1936
—BECAUSE THEY'LL BE EASY AND PROFITABLE TO SELL!

Contest Newspaper

This will be published monthly during the contest. It will be packed with the latest contest news. It will list leading contestants and show their position in the contest. It will give monthly scores and useful selling information. It will picture the lucky prize winners. We hope *your* picture will be one of those published.

Advertising Support

In plumbing trade papers bringing complete and useful information every month. To Architects bringing them correct and important information on Modern Automatic Gas Water Heater advantages and economies.

A complete order blank is provided for easy and accurate ordering of material.

Relief or Shut-Off Valves Mandatory on All Approved Storage Water Heaters

AS the result of long planning and official action by Committees of the American Gas Association, all storage water heaters approved by the Association's Testing Laboratories must now be supplied with "means to prevent excessive water pressures and temperatures." Such means must "be an integral part of every storage water heater," although, by a December 12, 1935, ruling of the Subcommittee on Approval Requirements for Gas Water Heaters, it need not be actually attached to the heater by the manufacturer so long as it is shipped in the same crate with the heater and is accompanied by proper instructions for installation.

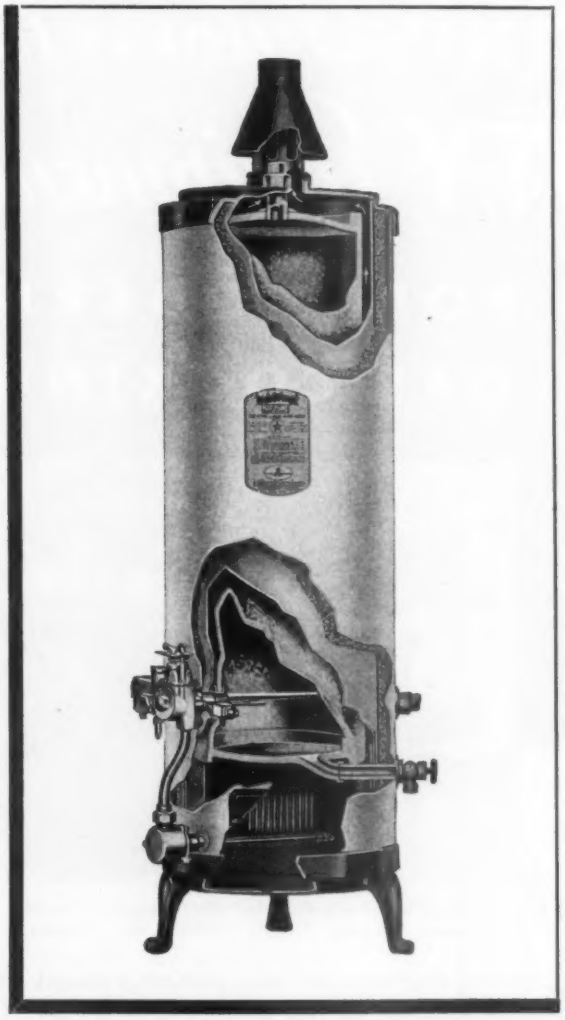
In 1933 the requirement specifying protective devices for limiting stored water temperatures and pressures was suggested by the subcommittee for incorporation in the approval standards for gas water heaters and was printed with other proposed revisions in January 1934 for criticism and comment by the industry. Shortly thereafter it was reconsidered in the light of the industry's reaction, reaffirmed and approved by the Association's Approval Requirements Committee, (A. S. A. Sectional Committee, Project Z21) as a part of the American Standard Approval Requirements for Gas Water Heaters which went into effect January 1, 1936.

However, at its January 1935 meeting, the water heater committee felt the matter to be of such importance that it set July 1, 1935 as he effective date for the relief device clause in question and ruled that it be made retroactive to all storage water heaters irrespective of the date of approval. Subsequently, however, the committees decided that additional time should be allowed for manufacturers to secure relief valves or develop their own and equip appliances therewith, and the effective date of the ruling was moved forward six months to January 1, 1936. All water heater manufacturers were notified of this action early in March, 1935, and again in May. It is, consequently, necessary that all American Gas Association approved storage water heaters be fitted with relief valves or shut-off devices limiting both stored water pressure and temperature and capable of complying either with the American Standard Listing Requirements for Relief and Automatic Gas Shut-Off Valves for use on Water Heating Systems, Z21.22-1935, or with special stipulations set forth in the American Standard Approval Requirements for Gas Water Heaters, Z21.10-1935. If a manufacturer wishes to use tested and listed relief or shut-off valves on approved heaters he should first contact the Testing Laboratories to secure permission to do so.

Inasmuch as approximately 30 models of relief valves of different capacities manufactured by seven companies already appear listed as certified in the American Gas Association Directory of Approved Gas Appliances and Listed Accessories, the procurement of satisfactory relief or shut-off units by water heater manufacturers should not be difficult.

It is recommended that manufacturers contact either the main Laboratory in Cleveland or the Branch Laboratory in Los Angeles regarding the renewal or extension of approval on heaters to which relief devices have been attached as a result of the previously mentioned ruling.

Decalcomania Used in National Gas Water Heater Campaign



REGISTER TODAY

IN THE NATION-WIDE

"CLEAN-UP"

CONTEST — THEN
CHOOSE THE FAVORITE

HOTZONE

WATER HEATERS

Here's why Hotzones are worthy of your consideration to help you make the 1936 water heater drive one grand success.

(1) Used by many of the leading Utilities throughout the Country exclusively.

(2) Hotzone Heaters have established a reputation for reliability—based on customer acceptance.

(3) Hotzone Heaters—known for low operating cost, and a minimum of service requirement. Utilizes luminous flame burner.

(4) Selected for the "Model Home of America"—Atlantic City, N. J.

(5) Behind this heater stands Welsbach's well earned reputation for reliable gas appliances produced with the technique which only a half century old experience can provide.

Welsbach COMPANY

Gloucester City, N. J.

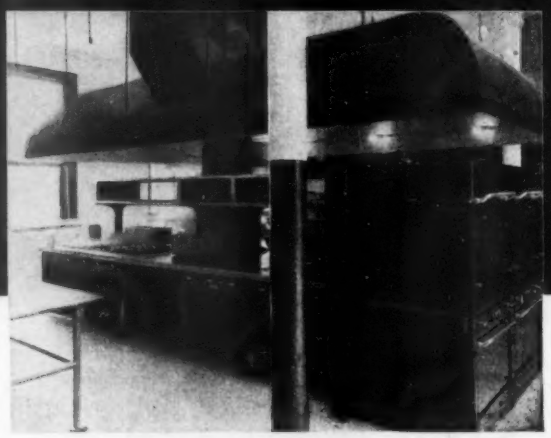
Branches in Chicago and San Francisco

Since 1887, Pioneers in the Manufacture of Gas Burning Appliances

MAGIC CHEF *Automatic* HEAVY DUTY *Equipment*

FOR MODERN GAS COOKING

Magic Chef Heavy Duty Installation at Buffalo General Hospital, Buffalo, N. Y.



Magic Chef Heavy Duty Installation at U. S. Naval Reserve Training Station, Great Lakes, Illinois.

Consider its Economy!

•With installation after installation being made in leading hotels, restaurants, hospitals and other institutions public and private, in every case reports are made of the substantial economies effected by Magic Chef Automatic Heavy Duty Equipment.

So large are these savings in fuel alone that in every case the equipment will pay for itself in a startlingly short time.

There are other savings—of time, labor and food—that in themselves are ample to justify consideration of this advanced line which has every advantage demanded by modern food service requirements.

Special features include perfect control of gas flow provided by the famous Red Wheel Lorain Oven Regulator; extra heavy oven insulation for cooler, more comfortable kitchens; Magic Chef non-clog burners with wide range and uniform distribution of heats; special alloy quick heating cooking top, light yet strong, to prevent warping or sagging; modern streamline design which contributes to easy cleaning, sanitation and convenience; better cooked and more wholesome and delicious food because of even, controlled heat; automatic lighting; speed, safety, dependability and durability. Write for details.

LOOK FOR THE RED WHEEL WHEN YOU BUY A MAGIC CHEF

AMERICAN STOVE COMPANY

BOSTON • NEW YORK • ATLANTA • CLEVELAND • CHICAGO
ST. LOUIS • PHILADELPHIA • SAN FRANCISCO • LOS ANGELES

Magic Chef
AMERICAN STOVE COMPANY

"SUCCESSFUL SELLING"

Novel Campaign Increases Water Heater Sales 110%

By Lucius S. Flint

"IF your landlord won't buy a storage water heater, it will pay you to buy one yourself. We'll protect you from loss on the purchase in case you move out of the house you are living in within a year, by moving your heater to your new home."

That offer to renters played one of the most important parts in a novel water heater campaign which in the past year, increased storage water heater sales 110% over the previous year for the Public Service Co. of Colorado. The company sold 1,600 storage heaters in Denver during the year and 900 in the smaller towns of the district, raising the Denver saturation from 38% to about 40%. Counting tank heaters, the city's saturation is now almost 97%. Even the 40% storage unit saturation figure is said to be the highest in the United States for a city the size of Denver. It is estimated that 40% of the year's business was done with renters.

"We consider the storage heater business one of our best load builders in that every individual home in the city—not apartment houses—could have this equipment without any additional capital investment for the company," says C. A. Bigler, manager domestic gas dept. "No larger meters or reinforcements are required. We have also found the servicing expense very low. The equipment represents about as nearly a 100% load factor as it would be possible to get, added to which is the fact that this business is in the higher rate brackets."

The company's rate structure may be of interest in connection with the latter point: $1.80 for the first 1,000; $1.20 for the second thousand; 75 cents for the third thousand and 52 cents each for the next seven thousand—a total of 10 brackets. An 835 B.T.U. natural gas is used. The average family having a storage water heater uses about 2,500 cubic feet per month.

How the Plan for Renters Works

Previous to this year, the company has had very little success in selling storage units to renters. Salesmen met the difficult-to-overcome argument that the tenant didn't know how long he would stay in his present home and couldn't afford to spend a lot of money to improve somebody else's property. If the landlord couldn't be sold on the idea, his property usually had to be taken off the prospect list.

The plan designed for renters has changed this entirely. Tenants feel that they are making a permanent investment in future comfort, wherever they live.

The utility is able to offer the free moving and connection service because no trade-in is involved on this class of business. If a landlord won't pay for a storage unit, the tenant naturally doesn't want his equipment in any way tied up with the property. So, he can't trade in the owner's old heater. He merely sets it aside for reconnection when he moves out and takes along his own heater.

Ordinarily, there is a loss of five or six dollars on pot stoves or tank heaters taken in on storage units. When the company doesn't have this loss, it can afford to do the free moving—actual cost of labor and fittings is about the same.

"Our rental owners of storage units are, generally speaking, just as liberal users of gas as property owners," says Bigler. "Whereas the tank heater owner ordinarily used his heater only for preparing the conventional Saturday night baths during the summer months when hot air furnace coils weren't in operation and for heating Monday wash water, a majority of automatic owners use the 100% hot water service. On tank heaters, we got only an average of six or seven M.C.F. per year. The automatics yield about 30."

To assure use of 100% hot water service with automatic installations, the company offered salesmen a three dollar bonus for every coal furnace water heating coil taken out in connection with a storage unit job. Nearly 90% of the jobs sold have carried this change.

Two important arguments have been used in convincing customers that heating water with furnace coils is expensive. First, tests of the American Gas Association showing that in the average home where five tons of coal are burned in a furnace containing water heating coils, one ton goes into the heating of that water. Second, the point that if the customers were actually getting free hot water with his furnace heat, the owner of a hot water heating plant would be able to heat his home without any fuel expense whatever. Still

another good illustration is the fact that an average pot stove used exclusively for water heating will burn a ton of coal in a month. In cases where furnace heating capacity is low, the salesman points out that it can be increased by removal of the water coils.

Do You Rent Your Home?
INSTANT HOT WATER SERVICE is NOW available to YOU
Buy an AUTOMATIC Gas Water Heater on terms equivalent to rent. Should you change your residence, this water heater may be inexpensively reconnected at your new address
The $1.50 monthly payments amount to ONLY 5¢ A DAY
LOW OPERATING COST
Ask the family that has one
Public Service Company of Colorado

Another very important factor in the success of the drive was the very reasonable terms offered: one dollar down and a dollar and a half a month. This averages out at about four year terms. So far, experience has been very good on the long-term business.

Three Main Contests

The year was divided into three main selling drives, the first in June and July, the second in August and the third during the last four months of the year. The closing contest was made for four months to overcome any tendency toward lagging interest during the closing months of the year. Cash awards were made to winners in the first drive, gasolene books to top men in the second and a trip to New York City, with all expenses paid, to the winner of the closing event.

The entire year's business was done by 23 men, all working in restricted territories. Prizes were awarded on actual number of units sold rather than on a quota basis.

The main contests were supplemented by a couple of others which created a great deal of interest. Free turkeys were given all salesmen who sold 12 units in the 30 days preceding Thanksgiving. The other event was a competition between inside and outside men. Results were indicated by a large clock in the lunchroom. Each unit sold meant an advance of a certain number of minutes. Two hands were used, one for each team. Eight of the 23 men won turkeys.

A point posting board was kept in the salesroom to indicate the results of all contests. Standings were referred to in the daily sales meetings and outstanding records of individual salesmen were praised and the reasons for their success analyzed.

Clever Advertising Used

Clever advertising, scattered through the year, played a very important part in the success of the campaign. The first ad used, one of the most effective in the entire series, had practically the entire space taken up by a huge illustration of a water heater. (Illustrated herewith.)

Two ads appealed to renters. One was headed: "Buy an automatic gas water heater at rental prices—only five cents a day." Copy stated that if residence was changed, the heater could be inexpensively connected. Details of the free transfer offer weren't advertised. The other ad was headed: "Do you rent your home? Instant hot water is now available to you. Buy an automatic gas water heater on terms equivalent to rent."

Then came a series of human interest ads featuring photographic illustrations of home scenes to illustrate the importance of hot water service and the savings made possible by storage equipment. One set of pictures told the story of the tired out housewife who had run up and downstairs all day heating water. Copy pointed to actual savings up to 20% with storage equipment.

Another ad showed a girl in a bathtub, illustrating the idea of a bath's energy restoring value after a hard day of work. Then came one showing a man shaving before he had plenty of hot water and afterward—displeased and pleased expressions.

Still another clever ad showed a housewife sitting on her lawn talking to a friend. Asked the friend, "What's the secret of being through with your work so early?" The answer: "Plenty of hot water when I need it cuts my work in half." Then, there was one bringing out the idea that friend husband doesn't mind drying dishes if there is plenty of hot water.

BUY an AUTOMATIC Gas Water Heater at RENTAL PRICES
Enjoy an abundance of hot water! If you are renting, install this AUTOMATIC Gas Water Heater on terms equivalent to rent. Should you change your residence, your heater can be inexpensively connected at your new address
The $1.50 monthly payments amount to ONLY 5¢ A DAY
LOW OPERATING COST
Ask the family that has one
Public Service Company of Colorado

The before and after idea was used again in an ad showing a man first frowning at a shower which sprayed cold water instead of hot and then smiling through a mask of hot water beads. Finally, an entire ad was devoted to the theme that furnace coils are expensive and wasteful.

3000 Buildings Heated With Public Service Gas

Three thousand customers of Public Service Electric and Gas Company, Newark, N. J., were using gas for house heating on December 1.

An increase in the number of customers using gas for heating has resulted from the lower residential gas rate schedule put into effect October 1. In the period between June 15, when the new rate was announced, and December 1, 795 new house heating customers have been obtained.

The effect of the new residential gas rate schedule, which brings the cost of gas as low as 50 cents per 1,000 cubic feet after 10,000 cubic feet have been used in any one month, has been to place gas fuel in a strong competitive position with other fuels for heating many types of homes and other buildings.

In the first ten months of 1935 there was a gain of 1638 gas meters served by Public Service Electric and Gas Company of New Jersey.

"Portland Utility Goes After the Storage Water Heater Business in Brisk Fashion"

By

Carlton Hanson

OFFICIALS of the Portland Gas and Coke Company of Portland, Oregon, decided early in 1935 that the only way they could obtain a satisfactory increase in the storage water heater business was to go after the business themselves instead of relying on dealer cooperation. The results at the end of the year show 1,164 automatic storage heaters in service on the rental-purchase plan and 394 more sold on conditional sales contracts, meaning an estimated annual revenue of $45,843.

Dealer Agreement

The company had entered an agreement with dealers in April, 1933, whereby the firm discontinued merchandising. In March, 1934, it developed an intensive dealer coordination program, which materially increased the sale of gas appliances through dealers over 1933, but not in sufficient volume to be considered satisfactory.

In order, then, to reenter the direct selling field it was necessary to make a strategic move so as not to interfere seriously with the dealer cooperation program. This was accomplished through representative plumbers and plumber dealers petitioning the company to reenter the direct selling field. The plumbers were not slow to realize that more sales of gas heaters meant money in their pockets, as the company was leaving the job of installing the heaters to them.

Rental Purchase Plan

A sales crew was recruited and trained the month of January for the "rental-purchase" campaign which opened February 1. This campaign lasted until August 31, and was continued after that date on the straight conditional sales basis. The rental was $1.25 a month, to be applied on the purchase price of $85., etc. Heavy newspaper advertising in February and March gave impetus to the drive.

It should be borne in mind that the company did not have a recruited and trained sales force at the beginning of the year, making the sales results it achieved in spite of this fact all the more distinctive. Sales on the rental-purchase plan, including those on conditional sales contracts, were 1,707. Cancellations for credit and miscellaneous reasons were 73. Removals for all reasons during the period ending in August were 106, leaving a net of 1528 in service at the end of the period. Replaced business for these 1528 heaters were 106 electric, 873 side arm gas water heaters, and 549 replacing solid fuel. In computing the estimated annual revenue from this business, the company assumed $3.50 a month per unit for 12 months where a competitive service was replaced, and for six months where a gas side arm water heater was replaced, on the assumption that the storage water heater would be used the year around as opposed to the seasonal six months' use of the side arm water heaters. This figure was the one of $45,843 stated at the beginning of this article.

Terms

Sales prices, terms and direct costs were as follows:

Size, High-Low	Sale Price	Down Payment and Monthly Payment	Cost	Delivery and Installation	Sales Commission
20-gal.	$74.50	$125.00	$35.66	$12.50	$7.45
30-gal.	86.50	150.00	40.42	12.50	8.65
44-gal.	104.50	225.00	48.87	12.50	10.45

It will be noted that the standard installation price for the job was $12.50, which was satisfactory to all concerned. There was a slight hitch at the time because the local code called for a separate estimate on each job. Company salesmen received $100 a month salary, plus commission.

The plumbers, by the way, were not restricted to installation. They were allowed their own sales, on which they received a commission of 10 per cent. The sales crew of the company numbered 30 in Portland, and 15 in adjacent territory, bringing the total sales force in Portland and vicinity to 45. The city itself was divided into three sales sections, with a group covering each. Thus, Portland housewives heard the sales message in an organized canvass. In the better districts house-to-house canvassing was used, together with leads from the main office submitted by sales clerks.

Heaters removed for all reasons were reinstalled as new heaters. The company has not yet made a study of the amount of payments made on water heaters which were removed as an offset to this expense. Sales of the advertised type of heater continued after the campaign. While reverts of 18.5 per cent existed in regard to the rental-purchase plan heaters, and 3.2 per cent on conditional sales contracts, it is the opinion of the company that a trained sales force in the beginning would have materially reduced the percentage.

Benefits

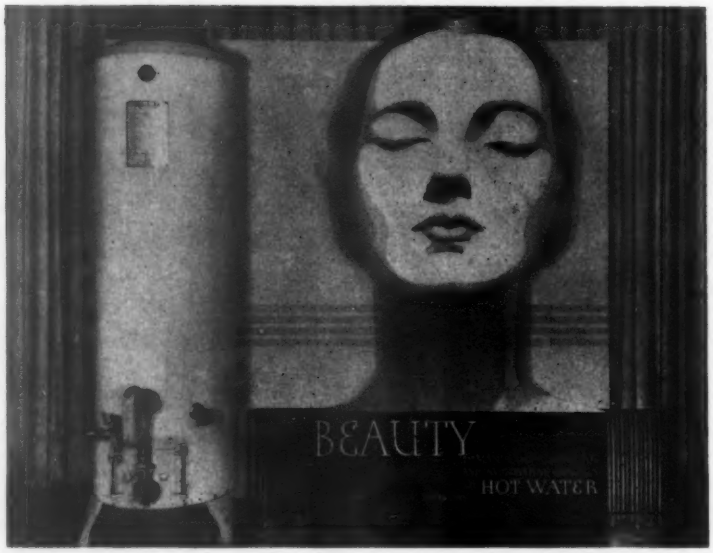
In the words of B. H. Parkinson, commercial manager of the Portland company, "One of the worthwhile continuing benefits from the heater campaign is that the company accomplished the original objective, and that the company is continuing the direct merchandising effort with the installation and sales commission arrangement with the plumbers in perfect harmony."

In contrast with the sale of 158 storage water heaters in 1934 before the company went after the business itself, it would seem that Mr. Parkinson has reason to rejoice.

Getting The Most From Your Water Heating Window Display Dollar

By Stuart Bratesman

Manager, Display Dept.
Boston Consolidated Gas Co.



GAS water heating is one of the biggest load-builders in the entire list of sales merchandising subjects covered by the gas company today. As such it should be given more than its share of expenditure and effort in a year 'round window display program.

Carefully planned window displays, based on original sales ideas will round out your merchandising efforts, right at the point of purchase, your sales office. Window displays have unusual features in which to play up various selling thoughts on any selected subject. Constant reminders, in the form of a series of window displays over a period of months, will build a definite group of sales. Window sets cannot be overlooked. Their very size demands attention.

In presenting your story of automatic gas water heating, it would be well to keep in mind three outstanding points to be stressed; namely, its convenience, abundance of hot water and low cost.

Here are two displays on gas water heating which bring out one or more of these points. Suppose we study them. The display entitled, "At my age, I certainly appreciate having lots of HOT WATER," rings of the human interest theme, so successful in window display advertising, today. A practical tie-up like this never fails to attract attention. Once having done this, you have the reader in a receptive mood for merchandising copy with which to "get over" your sales message.

The other thought is based on the idea of stressing the value of the cleansing and invigorating qualities of hot water in the beauty routine.

Many so-called beauty experts will frown on the use of hot water, but in most cases you will find it is because they wish to promote the sale of their own special preparations. After all is said and done, there is nothing quite so effective as a good scrubbing with soap and water. The soap, of course must be mild and cleansing, but the water should be hot, and of course heated with gas.

Get this thought over to your sidewalk audience with a display of this type. Window displays should educate the public as to the correct uses of gas heated beauty and household helps, as well as sell merchandise. We are up against tremendous competition, these days. Every "voice" at our command should be brought into play to counteract adverse publicity, and also to state our own case, clearly and forcefully. Intelligent window displays do these things, at little expense.

The low cost angle on gas water heating is probably the biggest sales argument we possess. After the

(Continued on page 72)

Announcing

HOUSEHOLD GAS WATER HEATING

A MANUAL FOR RETAIL SALESMEN

A 136 page book, size 5½ x 8, bound in cloth.

This book will comprise the series of articles published in the American Gas Journal under the caption "Domestic Gas Utilization," Water Heater Division, written by Charles W. Merriam, Jr., Division Commercial Manager, Roanoke Gas Light Co., Roanoke, Va.

Mr. Merriam has added new material to each chapter, bringing it up-to-date. This book tells the salesman what he has to know to sell successfully gas water heaters.—How to figure correct capacities to give a satisfactory service. It gives valuable material to help build the gas water heating load.

Chapter 1—Engineering ABC's
Chapter 2—Water Heater Types
Chapter 3—Hot Water—How Much?
Chapter 4—Gas Consumption for Water Heating
Chapter 5—Water Piping & Installation
Chapter 6—What Size Heater
Chapter 7—Automatic Heater Accessories
Chapter 8—Competitive Water Heating
Chapter 9—Hot Water—For What?

The National Gas Water Heater Campaign sponsored by twenty manufacturers begins February 1st. The Water Heater Committees of the American Gas Association and the Gas Appliance and Equipment Manufacturers Association will furnish you every sales help except TRAINED SALESMEN. A study of Mr. Merriam's book will fit your salesmen to get the most out of the water heater campaign. Every water heater salesman will want his copy.

Price of single copies $1.50 postpaid.

Liberal discounts for quantities.

AMERICAN GAS JOURNAL

53 Park Place **New York City**

Modern Gas Water Heaters

SOME OF THE MODELS FEATURED IN THE NATIONAL WATER HEATER CAMPAIGN

Welsbach "Hotzone" Water Heaters

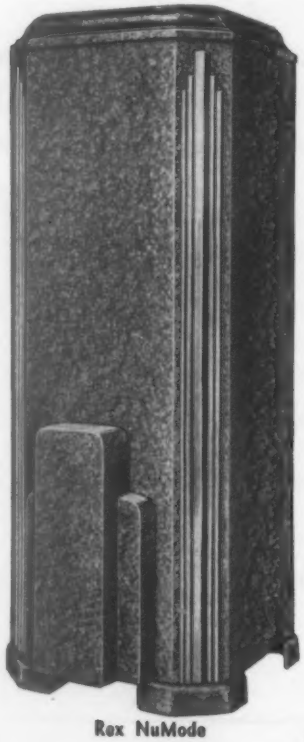
A steel tank of special design, insulated with rock wool packed between outer shell and inner terne plate flue liner.

Outer shell is heavy gauge, full-finished, steel body stock, green lacquered. Dirt, scale, etc. are held in a sediment trap, easily removed by a clean-out plug. A direct action thermostat controls the supply of gas to burner in accordance with temperature of water in tank. Burner is noiseless and has automatic shut-off. Capacities 15, 20, 30, 45 gallons, and 60 and 80 gallon capacities furnished on special order.

Welsbach "Stazhot" Water Heater

Consists of a steel tank galvanized inside and outside with virgin metal. Insulated with rock wool packed between outer shell and inner terne plate flue liner. Outer shell heavy gauge steel body stock, buff lacquered. Direct acting thermostat controls supply of gas to the burner. Welsbach automatic burner and shut-off is standard in all models. Capacities—15, 20, 30 and 40 gallons. Sixty and 80 gallon heaters of this type furnished on special order.

These water heaters are manufactured by the Welsbach Co., Gloucester, N. J.



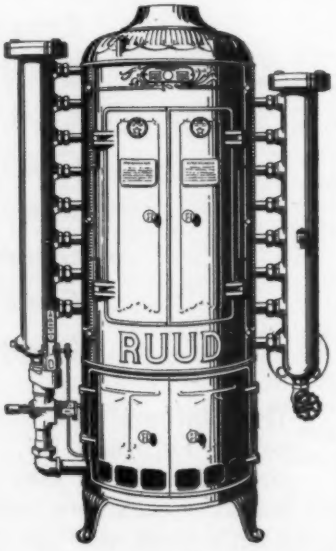
Rex NuMode

Rex Nu-Mode Automatic Water Heater

A new product of the Cleveland Heater Co., Cleveland, Ohio. The square design with cut-away corners is finished in dull crinkle-enamel. The corners are trimmed with chromium plated ornaments. In this heater modernism, practicability and economy are combined.

Ruud Multi-Coil Automatic Storage System

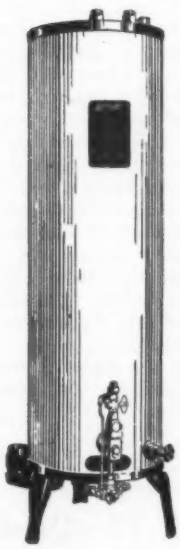
Five sizes ranging from 75 to 500 gallons an hour. Made with galvanized steel, black iron and copper tanks as selected. Installed singly or in battery. Installed with or without steam coils. This is a heavy duty water heater for Volume



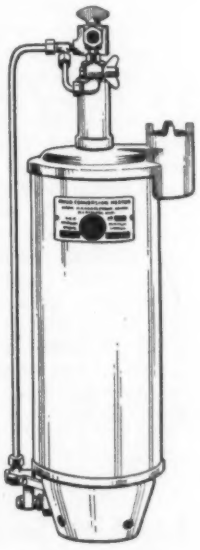
and Commercial Water Heating—for residences, apartments, institutions and commercial buildings. Premium copper coils. Porcelain lined manifolds. Ruud-Moment Valve. Heavy, durable cast irong jacket.

Ruud Conversion Heater

Two sizes, one supplying usable hot water up to 75 gallons a day and the other up to 150 gallons a day. This is the short, low-cost step that users of tank heaters and coal heaters can make to equip their home with automatic gas hot water service. The present tank is retained, this investment being eliminated,



Ruud C.C. Automatic Storage Water Heater.



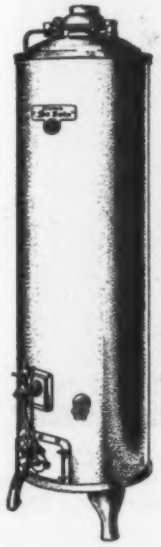
Ruud Conversion Heater.

and the conversion heater is installed directly to it. Built-in thermostat and automatic gas cut-off. Cast-brass heating pot. Heat-gathering fins.

Ruud C. C. Automatic Storage Water Heater

Three sizes—20, 30 and 50 gallon with galvanized steel tanks. Two sizes, 30 and 50 gallon tanks of alloy-copper. This is a low-speed storage water heater with customer-control of the gas bill through the customer's own selection of the three different heat-speeds. New-process, super-weight tanks. Thick insulation. All-metal thermostat. All-metal automatic gas cut-off. Internal heating tube, wholly inmersed in the water.

Ruud De Soto Automatic Storage Water Heater



Ruud Model W Faucet-Action Water Heater.

Five sizes, built with new-process, super-weight tanks only. Sizes range from 15 to 75 gallon tanks. This is a full-speed line of water heaters capable of handling a great majority of residential requirements and many commercial buildings also. All-metal thermostat. All-metal automatic gas cut-off. Thick insulation. Handsome finish. Special models for hard water cities.

Ruud Model W Faucet-Action Water Heater

One size. Can be installed on the floor or on the wall. Highly finished in porcelain enamel and chrome. Heating action is instant without standby losses. Copper waterways. Heat-gathering fins. De luxe appearance. Widely used in residential and commercial installations.

These water heaters are manufactured by Ruud Manufacturing Co., Pittsburgh, Pa.

Handley Brown Heaters

The Number 30 and Number 50 Handley Brown Heaters are the pioneer low input gas water heaters. The U-tube method of heat application gives very high overall operating efficiency and the simple design insures a minimum of servicing. These heaters produce the type of customer satisfaction that secured water heater sales in large quantities.

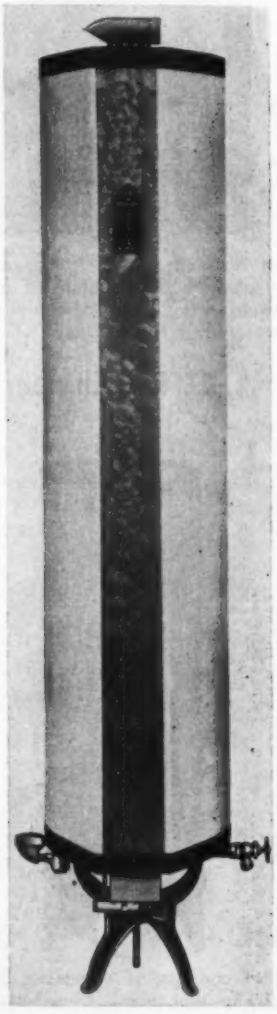
The Number 30 heater has a net capacity of 28½ gallons and will deliver up to 95 gallons of 90 degree rise hot water in a household day of 16 hours with an input of 4500 B.T.U. per hour.

The Number 50 heater has a net capacity of 50 gallons and will deliver up to 145 gallons of 90 degree rise hot water in a household day of 16 hours with an input of 6500 B.T.U. per hour.

Mirro-Shell Conversion Heater

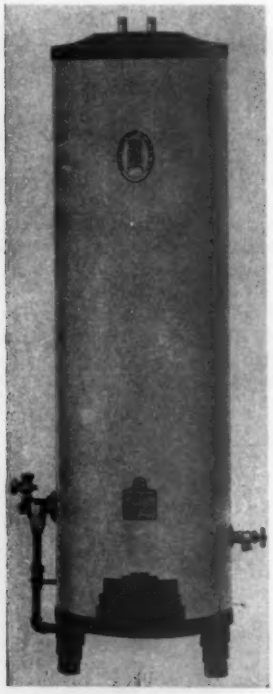
The Handley Brown Mirro-Shell Conversion Heater through using a revolutionary new principle of heating water with reflected heat will convert at low cost a range boiler into a highly efficient automatic low consumption heater that is as attractive in appearance as a factory built heater.

The Mirro-Shell delivers up to 85 gallons of 90 degree rise hot water in a household day of 16 hours with an input of 4000 B.T.U. per hour.



No. 45 U-Tube Type Heater

The Number 45 is a U-tube type heater for large demand requirements. The U-tube method of heat application gives the same high over-all operating efficiency and other advantages that can be had from the Handley Brown U-Tube Type Low Consumption Heaters. This heater insures satisfaction for gas fuel for water heating for commercial and residential customers who use hot water in large quantities.



The Number 45 heater has a net capacity of 42½ gallons and can furnish in excess of 400 gallons of 90 degree rise hot water in a 16 hour day.

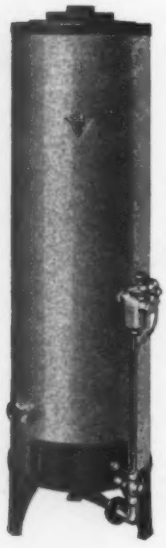
A. G. P. "Chipper"

Jacket consists of one-piece 20 gauge steel. The inlet tube is tinned brass, electrically insulated with fibre bushing. No interior flue as all flue products pass around sides of tank and pass over top head of tank and out 3" draft diverter. The burner is A.G.P. regular cast iron drilled port burner. The thermostatic pilot for manufactured gas is a Titan A-4 with single horizontal jet. For natural gas—Titan A-25 pilot with vertical jet and lava pilot burner tip. Fully automatic. It comes in capacities of 15, 20, 25, 30 and 40 gallons.

A. G. P. "Dictator"

In this heater hot water is taken from highest point of tank, thereby removing all air from top of tank and reducing possibilities of top corrosion. The inner flue is large in diameter providing ample heating surface. Flue offset about 4 inches toward rear of tank providing improved circulation and more effective utilization of heat through the bottom head. The flue baffle is spiral design providing for full utilization of large heat absorbing surface of inner flue. Heavy rock wool insulation. It is equipped with snap acting water temperature control thermostat drain cock, patented jet type burner and thermostatic pilot built within main burner. Capacities 15, 20, 30, and 40 gallons.

A.G.P. Regulator



A.G.P. Dictator

A. G. P. "Regulator"

A steel jacket heater—baked enamel, ivory finish. The tank comes in galvanized iron or copper. The intake tubes are copper, insulated from tank, and prevent possibility of corrosion. Multi-Kidney shaped flues are designed to give perfect balance between heating surface and flue area. Flues are separated at top and bottom where they are welded to the tank, forming centre water column completely surrounded by hot flue gases, causing a rapid heating and circulation of water. It is equipped with water temperature control, thermostatic pilot shut-off and hand gas shut-off, all located in one valve; drain cock, condensation baffle and thermostatic pilot. Gas valve is always shut unless pilot is lighted. Capacities—20, 25, 30, 40 and 75 gallons.

These water heaters are manufactured by American Gas Products Co., New York, N. Y.

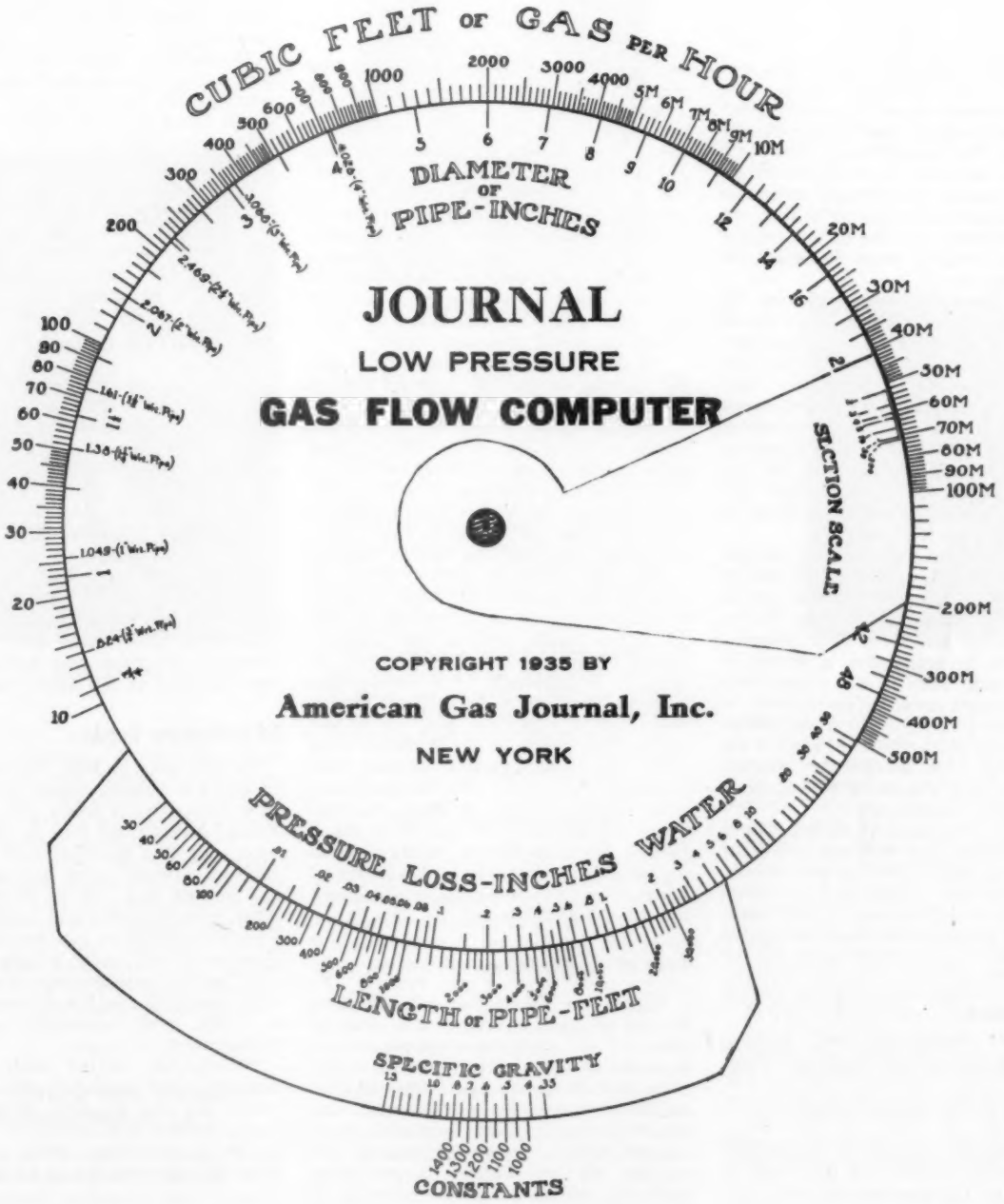
Lovekin, Series 10—Quick Recovery Storage Gas Water Heater

A completely self-operating, self-contained water heater unit. It is equipped with a full brass Lovekin-Robertshaw snap action thermostat adjustable as to temperature. It is completely insulated over the sides and top, covered with a steel jacket sheet and a pressed steel top cap. Many new features are embodied in the design, including unique means of reducing stand-by losses. Capacities 20, 30 and 52 gallons.

This water heater is manufactured by the Lovekin Water Heater Co., Philadelphia, Pa.

NEW IMPROVED COMPUTER

FOR LOW PRESSURE



Price $2.50 each

American Gas Journal, 53 Park Place, New York

FEBRUARY 10, 1936, marks just one hundred years since gas was first distributed through the streets of Philadelphia from a central plant. Unevenly but irresistibly, like the gathering flow of a great river from its far-away source, the huge and complex modern gas service of today that meets the demands of a city of two millions of people has evolved slowly but steadily from the small beginning long ago.

Almost from the very beginning the Philadelphia Gas Works has been owned by the City, but the advances which have placed it in the forefront of the gas utility systems of the country have been made under the management and operation of a privately owned corporation. The United Gas Improvement Company, which has leased the plant from the City since 1897. Indeed, the words "gas" and "U. G. I." have become synonymous to the average Philadelphian.

The first city in the world to use gas for lighting was London, in 1807, and in 1816 Baltimore became the first city to introduce gas illumination in the United States. Boston and New York preceded Philadelphia by more than a decade in following suit. Thus it is a commentary upon the staunch conservatism of good old Philadelphia to note the fear and doubt which greeted the proposal to erect a gas plant in this City, despite the evidence that gas lighting was being used successfully in other communities.

A number of prominent Philadelphians petitioned Councils in 1833 not to proceed with the construction of a gas works. Parts of the text of that petition, which now seems so incongruous, are so interesting and amusing that they are quoted as follows:

Remonstrance

Philadelphia, Nov. 28, 1833.

"To the Honorable the Select and Common

Councils of the City of Philadelphia

"GENTLEMEN:

"The subscribing beg leave respectfully to remonstrate against the plan now in agitation for lighting the city with gas, as they consider it a most inexpedient, offensive, . . . mode of lighting.

". . . And when we consider that this powerful . . . agent must necessarily be often left to the care of youth, domestics and careless people, we only wonder that the consequences have not been more appalling. It is also an uncertain light, sometimes suddenly disappearing and leaving streets and houses in total darkness.

"The Waters of the Delaware and Schuylkill, now considered the most pure and salubrious in the world, as many long voyages have fully tested, must soon, we fear, experience the deterioration which has reduced the water of the Thames to the present impure and unhealthy state, for no reservoir will be able to contain the immense fetid drains from such an establishment, and very soon the rivers must be their receptacle . . . the constant digging up of the streets, the circumstance of the gas pipes which at the intersection of each square must come in contact with the water pipes, are difficulties and evils which we would anxiously avoid.

"In conclusion, we earnestly solicit that the lighting of our city with oil may be continued . . ."

One can hardly blame the citizens for turning down several earlier wild schemes, such as that of an individual, with more enthusiasm than common sense, who proposed to light the streets from towers, in each of which gas would be made. This gentleman expressed the opinion that the whole city could be lighted from one tower three hundred feet high. More as a spectacle and as an advertisement than as a practicable service, the Chestnut Street Theatre and Peale's Museum, as well as the residence of a venturesome citizen at Seventh and Lombard Streets, were lighted with "the gas," as it was called. The lights in the Museum were finally abandoned because of the quite justifiable fear of fire, since the generating plant was in a closet under a stairway. There was also a tavern lighted by gas at Second and Dock Streets, whose proprietor advertised his faith in the future of the industry by calling his establishment the "Gas Light Tavern."

Fear of Competition

There were other practical objections to the innovation. There was fear of powerful and destructive competition introduced by gas. Experience in other cities had shown that gas street lighting seriously injured the oil business. Gas had to compete in those days with whale oil and candles. In their efforts to discourage the introduction of gas street lights, the oil dealers cut the price on oil for public lamps until it sold at 80 cents per gallon—22 cents below the market for other purposes.

Neither the cupidity of the oil dealers nor the fears of the conservative citizens could stop the development of the infant industry, however. The good old method of agitating a public question by writing to the editor was invoked by one reader of Poulson's *Daily Advertiser:* "Allow me, Mr. Editor, one corner of your paper —Are we ever to have our City better lighted than it is at present? Could a portion of the Girard Fund be better employed than by procuring lamps of an entirely different construction than those at present in use, having reflectors at the top instead of a dark colored tin which seems to absorb the light? Would not gas give double the quantum of light at the same or probably less expense?" The indignant gentleman then goes on to complain that the oil lamps were not lighted if the Almanac showed that there was—or should be—moonlight, even if the night was one of darkness or dismal rain. In this connection, it is interesting to know that even after the city was illuminated by gas, the street lamps were not lighted on moonlight nights until 1845.

At about that time there was good rabbit hunting just across the Schuylkill River from the gas works, near the site of the present Pennsylvania Railroad Station. The Editor's grandfather was one of those who enjoyed the sport which this region then afforded.

Action By City Councils

The first definite steps towards the establishment of a gas plant came in 1834. City Councils engaged Mr. S. V. Merrick, a gentleman of outstanding character and ability, to go to Europe and report back to them on City lighting by gas.

As the result of Mr. Merrick's report in 1834, the City proceeded with the construction of a works on property extending from Twenty-second Street to the Schuylkill between High Street, now Market, and Filbert Street. This was then quite an outlying area. From its location, the plant was known for the next 65 years as the Ninth Ward Works.

Manufacture Begun

On February 8, 1836, the manufacture of gas was actually begun and two days later forty-six gas lamps were lighted on Second Street from Vine to South. There were only two premises with a total of nineteen private lights equipped to use gas on the first day of its availability. Thus, conservatively and carefully, Philadelphia started its gas works one hundred years ago, under private ownership and public management—the situation later reversing itself and becoming as it is today, public ownership and private management,

Philadelphia started with gas rates that compared favorably with other cities where gas was available. Prices in New York, Boston and Baltimore were $4 a thousand cubic feet, while in Philadelphia the rate was set at $3.50.

Business Expanded

Business for the Philadelphia Gas Works expanded rapidly. At the end of 1837, it was stated with pride—"besides the City Hall, State House, the public offices, the market house, theatres, circus, all the public hotels and most of the stores on the lines of the pipes, it is used with great advantage and satisfaction in several churches and in private dwelling houses."

News of the Gas Industry

F. A. Newton Elected Director of A. G. A.

At the January meeting of the Executive Board of the American Gas Association F. A. Newton of The Commonwealth & Southern Corp., was elected a director to fill the vacancy for the unexpired term ending November, 1936, due to the election of N. C. McGowen as second vice-president.

F. A. NEWTON

Mr. Newton enjoys an international reputation, particularly in the field of public utility rates and valuation. He is in charge of rates and valuation matters for The Commonwealth and Southern Corp., and its subsidiary companies.

For two years Mr. Newton was chairman of the Rate Structure Committee of the American Gas Association and is still a most active member of this committee. He has served as president of the Michigan Gas Association and is now chairman of the Rate Research Committee of the Edison Electric Institute.

W. F. Perkins New President Bartlett-Hayward Co.

Mr. Howard Bruce, Chairman of the Board of Directors of The Bartlett Hayward Company, announces the following changes in the officials of The Bartlett Hayward Company:

Mr. Chester F. Hockley, who has been President of The Bartlett Hayward Company since 1931, has retired to become President of the newly re-organized Davison Chemical Corporation. He will, however, continue as a Director of The Bartlett Hayward Company.

Mr. Walter F. Perkins, formerly Vice President and General Manager, has been elected President.

WALTER PERKINS

Mr. Geo. E. Probest, Jr., formerly Secretary and Treasurer, has been elected Vice President and Treasurer.

Mr. Herman H. Vordemberge, formerly Assistant Secretary and Assistant Treasurer, has been elected Secretary and Assistant Treasurer.

Mr. Perkins first became associated with The Bartlett Hayward Company in 1914. He filled various positions up to that of General Superintendent, from which position he retired in 1927 to become Manager of the Harrison Works of the Worthington Pump & Machinery Corporation. In 1932, he returned to Baltimore as Vice President and General Manager of The Bartlett Hayward Company, which position he has held up to the present date.

Jas. F. Pollard Honored

Jas. F. Pollard has been elevated to the Presidency of the Seattle Gas Company succeeding Franklin T. Griffith. This action marks the completion of the financial reorganization of the company and recognizes the careful and expert management Mr. Pollard has given to the company since he became its General Manager in 1930. Mr. Pollard was formerly a member of the engineering staff of the California Railroad Commission and later Vice-President and General Manager of the Coast Valleys Gas & Electric Company at Salinas and Monterey, California. He remained in charge as Division Manager after the acquisition of that company by the Pacific Gas and Electric Company. He is now serving as Vice-President of the Pacific Coast Gas Association.

Pittsburgh Equitable Meter Co. Activities

The several plants in England, France, Germany, and other European countries operating under patents owned by the Pittsburgh Equitable Meter Company were visited by Colonel Rockwell, President of the Pittsburgh Equitable Meter Company, in 1934. These foreign connections keep the Pittsburgh Equitable Meter Company in touch with developments throughout the world. Because of reciprocal arrangements, Colonel Rockwell has visited many other European meter plants to study their operating methods and their latest developments in gas meters.

As a result of impressions received on this trip by Mr. Rockwell, it was decided to have Mr. F. Niesemann of the Research Department of the Pittsburgh Equitable Meter Company visit a number of foreign plants to make a more detailed study, and he has just returned with a considerable amount of information, while

F. NIESEMANN

options have been obtained on a number of new developments which cover American patent rights.

As a designing engineer for Julius Pintsch Company, Berlin Fuerstenwalde, is the Flow Meter Department and as technical adviser on patents and inventions in the Flow Meter Department of the Siemens & Halske Company, Berlin-Siemensstadt, he directed a large amount of industrial research work and was personally responsible for a number of inventions in the industry covering gas meters and pressure regulators.

In connection with these negotiations, Colonel Rockwell expects to visit the European countries again early in 1936; and the Pittsburgh Equitable Meter Company will have some radically new developments to submit to its customers, along with minor improvements already incorporated in these products.

Moves to New Offices

The Central Foundry Company, New York announces the removal of its Pacific Coast sales office from San Francisco to 278 Fourth Street, Oakland, California.

Mr. John Ponsaing, District Sales Manager; and Messrs. E. A. Keithley and K. P. Hughes, Sales Representatives will make their headquarters at this new office.

Robertshaw Thermostat Sales Show 70.7% Increase

An indication of the improvement in the gas appliance business generally is shown by the reported increase of 70.7% in unit sales by the Robertshaw Thermostat Company, Youngwood, Pa. The company reports the largest unit sales in its history. Plant facilities were enlarged by the completion of a new addition providing 10,000 sq. ft. of space. The Robertshaw plant is modern in every respect. While compact in size, it is efficiently laid out and completely equipped with modern high-speed automatic machinery, providing fine precision work at high production and at low cost.

The Robertshaw plant produces a complete line of thermostats for domestic ranges, coffee urns, steamtables, heavy duty ranges, rinse tanks, ovens and deep-fat fryers for hotel and restaurant kitchens, a wide line of industrial thermostats for manufacturing processes and a line of automotive thermostats for controlling the temperature of motors and car heaters. For fifteen years national advertising has been employed to sell the advantages of heat control cookery and Robertshaw efficiency to millions of gas consumers. Among its activities that have been outstanding is the "direct-to-the-tenant apartment house program" conducted last fall. While Robertshaw's 1936 plans have not been announced in detail, the management reports that they contemplate a program closely coordinated with the National Gas Range Contest and a more intensive effort than ever before to sell the benefits of measured heat to gas users.

Did You See
the announcement
of the New
Semet-Solvay
Steam Accumulator
in the January
American Gas Journal?
We suggest that you
ask for a proposal
and an estimate of the
savings you can make.

Semet-Solvay
Engineering Corp.

40 Rector St. New York

Elect Hugh Cuthrell Ass't Vice President

Hugh H. Cuthrell has been elected Assistant Vice President of Brooklyn Union Gas Co. He has been connected with this company since May, 1927.

Mr. Cuthrell has been active in business and civic organizations in Brooklyn as well as taking a prominent part in the American Gas Association. He was chosen chairman of the A. G. A. Committee on Trade and Dealer Cooperation at the 1930 convention and again in 1931.

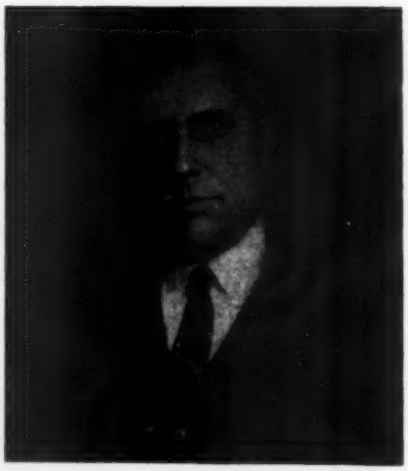
H. H. CUTHRELL

At the 1932 convention he was given the Charles A. Munroe award for his noteworthy and meritorious work in matters relating to merchandising and dealer cooperation. This award is given annually to the individual who, in the opinion of the A. G. A. executive board, has made to the gas industry an individual contribution of distinguished and outstanding character.

A. I. Phillips Heads Rate Committee

Appointment of Alfred I. Phillips of New York City as Chairman of the important Rate Structure Committee, has been announced by L. B. Denning, President of the American Gas Association. Mr. Phillips has been a member of the Committee since 1929 during which time he has contributed considerable material particularly in reference to therm rates, special rate forms and rate application.

Following graduation from Massachusetts Institute of Technology, Mr. Phillips went to The United Gas Improvement Company, after which he had a wide and varied experience in practically all phases of gas company operation. As service engineer of the American Gas Association he visited Great Britain, and, among other things, studied the therm method of charging, then new, and British methods



A. I. PHILLIPS

of rate regulation and rate forms. Also as service engineer, Mr. Phillips made a study of service charge rates which at the time were another innovation. Now in consulting practice, he has done considerable work on development of rates for house heating and industrial service.

Under the able guidance of Mr. Phillips, the Rate Structure Committee expects to produce a report containing practical consideration of current rate matters.

John C. Parker Elected V. Pres., Consolidated Gas Co., New York

A number of changes in the personnel of the officers and Board of the Consolidated Gas Company of New York and its affiliated companies were announced following a meeting of the Board of Trustees held January 27th. These changes include the election as vice-president of Consolidated Gas Company of John C. Parker, who is resigning as president of the Brooklyn Edison Company, Inc., and the election as executive vice-president and a director of the Brooklyn Edison Company of A. Augustus Low, former president of Utica Gas and Electric Company. In addition, two new trustees were elected to fill vacancies existing on the board of the Consolidated Gas Company, namely, Edgar Palmer, chairman of the board of the New England Zinc Company; Daniel C. Creem, president of the Brooklyn Fire Brick Works.

Floyd L. Carlisle, chairman of the board of Consolidated Gas Company, was elected chairman of the board of Brooklyn Edison Company and Frank W. Smith, president of Consolidated Gas Company, became president of Brooklyn Edison Company at a meeting of the Directors of the Brooklyn Company following the meeting of the Consolidated Gas Trustees.

The election of Mr. Parker as vice-president of Consolidated Gas is regarded as significant in that in his new position he will have charge of all the activities relating to technical development, research and experimentation for the entire group of gas, electric and steam companies in the Consolidated System.

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VERTICAL RETORTS

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H. H. Dugdale Elected V. President

H. H. Dugdale, general sales manager of American Gas Products Corporation for the past nine years, has been made vice-president in charge of sales, according to an announcement from William T. Rasch, president. Mr. Dugdale entered the employ of the A. H. Wolff Gas Radiator Company, predecessor of the American Gas Products Corporation, in Chicago in

H. H. DUGDALE

1924, and was made assistant sales manager a short time later. He was transferred to New York in 1927, and during the latter part of that year was made sales manager. Prior to entering the gas industry, he was superintendent of production and afterwards sales manager of Briggs & Stratton, a manufacturing firm in the automobile industry.

Mr. Rasch also announced the appointment of Harold Massey, formerly sales engineer in the Home Office, to the position of assistant general sales manager. Mr. Massey entered the gas industry in 1923, following his graduation from Stevens Institute of Technology, as an employee in the manufacturing department of the William M. Crane Co. Later, when that company became the Standard Gas Equipment Corporation he entered the designing and engineering department. He entered the employ of American Radiator Company in 1930 as a designer of gas appliances and was later transferred to the American Gas Products Corporation as sales engineer, when that company became a part of the American Radiator & Standard Sanitary Corporation.

G. Ostlund Elected Chairman Commercial Council

George Ostlund, general sales manager of the Consolidated Gas Company of New York, was elected chairman of the Commercial Council of the company on January 14. The Commercial Council is composed of department heads and assistants in what are known as the general commercial departments.

A. E. Turner, general superintendent of the Customers' Service Department, was elected vice-chairman, and Howard F. Weeks, assistant director of the Editorial Bureau, was re-elected recorder.

Henry Obermeyer, retiring chairman, was elected to the Executive Committee of the Council. The other members selected for the Executive Committee were:

J. B. Lindon, Commercial Department; J. O'Kolskie, Customers' Service Department; and J. C. Yordon, Sales Department.

Dr. Wilbert J. Huff Appointed Chief Chemist of Explosives Division, Bureau of Mines

Dr. Wilbert J. Huff, of the engineering faculty, Johns Hopkins University, has been appointed Chief Chemist of the Explosives Division of the Bureau of Mines, Department of the Interior. Dr. Huff was a member of this Division, in charge of chemical work at the Pittsburgh Station, after the World War, and there carried on a number of researches, one of which, on the corrosion of firearms, led to the widespread introduction and use of present day non-corrosive ammunition. He is a graduate of Yale College, with general honors, and special honors in Chemistry, and was Loomis Fellow in Yale University, from which he received the degree of Doctor of Philosophy in 1917.

In 1924, Dr. Huff initiated the work of the Department of Gas Engineering, Johns Hopkins University, which he has headed since that time, and has served as a consultant on chemical and engineering problems in the gas and fuel industries. He has been active in the work of the American Chemical Society, the American Gas Association, and the American Institute of Chemical Engineers.

New Patent Valve Folder

"Hot But Not Too Hot" is the title of a descriptive folder being distributed by the Patrol Valve Company, Locust Avenue and W. 114th Street, Cleveland, Ohio, manufacturers of protective relief devices for water storage tanks and range boilers. It outlines the operating conditions existing within a water storage tank and explains why combination temperature and pressure relief valves should be installed on all systems, whether they be of the open or closed types. The company manufactures a complete line of relief valves, all of which have been tested and listed by the American Gas Association under the new A. G. A. Relief Valve Requirements effective January 1, 1936.

New Connelly Year Book

The Connelly Iron Sponge and Governor Company, Chicago, Ill., issued a book entitled, "Desk Private Year Book for 1936." It is a daily calendar and memorandum book in new and improved form. It combines the desk calendar pad, the personal diary, the business diary and the appointment book. A page is devoted to each business day of year, and half of the page is numbered for appointments from 8 A.M. to 7:30 P.M. and the balance of the page for memoranda. It also contains the complete calendar for 1935, 1936, 1937 and 1938.

New Jersey Gas Association To Hold Twenty-Fifth Annual Meeting

The twenty-fifth annual meeting of the New Jersey Gas Association will be held at Asbury Park on April 2, 1936. Approximately 500 persons will attend the one day session.

It is expected that L. B. Denning, President of the American Gas Association, will head a strong list of speakers on subjects of vital interest to New Jersey Gas men.

Of particular interest is a gas water heater symposium which will include discussion under five headings. Our market, Our competition, New water heater developments, Plumber dealer cooperation, and Modern selling methods are subjects that will create considerable interest.

OUR PROBLEM

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We have devoted sixteen years of our energy and ingenuity to one problem only: the production of an iron oxide that will cut down the purification cost of the gas company. We believe we have solved this problem with the development of GPM IRON HYDROXIDE. **52% of the gas made along the Atlantic coast is purified by**

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GAS PURIFYING MATERIALS CO.
INCORPORATED
LONG ISLAND CITY, N. Y.
PROVIDENCE, R. I.

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FORD MOTOR COMPANY

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10,000,000 CU. FT. STACEY-KLONNE DRY HOLDER

For Erection At Its River Rouge Plant

The decision to purchase this type of holder was reached only after an extensive investigation of all types of Gas Holders thruout the United States and abroad, with particular emphasis on operating records and costs.

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GAS CONSTRUCTION CO.

L. J. Brown, Chairman; Wayne Stacey, President; Paul C. Rodgers, Executive Vice President — Cincinnati, Ohio — R. B. Luebbe, V. P. and Chief Engineer; W. S. Guitteau, Vice President; A. E. Harvey, Sales Engineer

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remain tight and are easily cleaned. These are the requirements for continuous satisfactory operation.

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Where a change in temperature calls for automatic action or where automatic control of temperature is the problem, Chace Thermostatic Bimetal offers accurate and unfailing action. Regardless of what you manufacture, we invite requests for more information on Chace Thermostatic Bimetal.

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H. B. RUST

Henry Bedinger Rust, Chairman of the Board of The Koppers Company and for many years its President, died at his home in Pittsburgh, Friday evening, January 17th.

He was the son of the late Col. Armistead T. M. Rust and was born December 13, 1872, on his father's farm, "Rockland," near Leesburg, Virginia.

He was educated in the country public schools of Virginia and completed his education by private study. At 17 he came to Pittsburgh and secured a position as axeman on an engineer corps in the employ of the City. At twenty-one he was made Assistant City Engineer.

At twenty-eight he was made Superintendent of Construction for the Colorado Fuel and Iron Company and had charge of the erection of the plant at Pueblo, Colorado.

At thirty he returned to Pittsburgh as Vice-President and General Manager of the Rust Boiler Company, which had been organized by his brother, Edwin G. Rust.

In 1914, with H. W. Croft and Hamilton Stewart, he developed a plan for the purchase of the H. Koppers Company, a comparatively small engineering and contracting company with headquarters in Chicago. This company was engaged in the designing and building of parts of by-product coke plants under patents of H. Koppers, of Essen, Germany.

With the cooperation and backing of Messrs. A. W. and R. B. Mellon, this business was taken over the latter part of 1914. H. B. Rust was made President, and a few months later the general offices were moved to Pittsburgh. It developed rapidly into the outstanding business in its particular field, which includes the designing and building of by-product coke, gas, tar and other industrial plants, mining and production.

Mr. Rust was a man of vision and great constructive ability. He had a remarkable understanding of human nature and a vital interest in his fellow men and their problems. He gave unstintingly of his time and strength in the interest of any employee or friend who needed help in time of trouble. In building his organization, two of the prime requisites were integrity and character, and he had the confidence and loyalty of his associates and fellow workers to an unusual degree. The standing this organization has enjoyed is but the reflection of the character of the man who built it.

EUGENE H. ROSENQUEST

Eugene H. Rosenquest, president and director of the Westchester Lighting Company, Bronx Gas and Electric Company and the Yonkers Light and Power Company died January 26th at the age of 66.

In 1896 Mr. Rosenquest became superintendent of the Bronx Gas & Electric Company; two years later he was made vice-president and general manager and in 1910 was made president. He was elected president of the Westchester Lighting Company in April, 1926 and president of the Yonkers Electric Light and Power Company in January, 1932. The three companies are subsidiaries of the Consolidated Gas Company of New York.

Appointed General Sales Mgr.

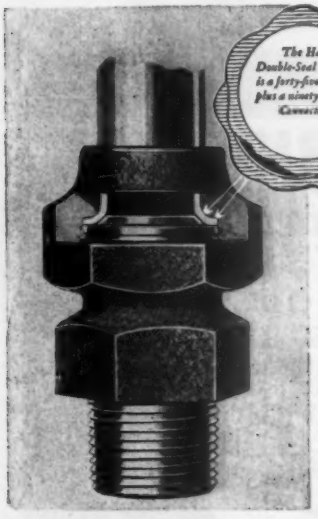
C. V. Sorenson, for many years identified with utilities, became general sales manager of the Citizens Gas and Coke Utility, Indianapolis, Dec. 15. Since November, 1934, Mr. Sorenson has been general sales manager of the Northern Indiana Public Service Company, which has its headquarters at Hammond, Ind. Prior to that he was in charge of merchandise sales for the Public Service Company of Indiana and the Northern Indiana Power Company.

New Southern California Gas Rates

An unusual type of optional domestic and commercial rate has been filed to take effect February 15 by the Los Angeles Gas and Electric Corporation, the Southern California Gas Company and the Southern Counties Gas Company which between them render natural gas service to most of Southern California from Santa Barbara and Dinuba on the North to the San Diego county line on the South and as far East as Palm Springs.

The new rate does not supplant existing domestic schedules but offers a 15 percent discount on that portion of the monthly billing which is in excess of $2.00 and less than $25.00 per month. That is, a consumer receiving a bill under existing schedules of $3.00 would receive a discount of 15 percent of $1.00, or 15 cents. A bill of $25.00 or over would receive the maximum discount of 15 percent of $23.00, or $3.45. This discount is available, upon application, to all consumers who use gas regularly as the principal fuel for cooking, automatic water heating and house heating. The measure of principal use will be the possession and use of a gas range with at least 4 top burners and over, one or more automatically operated gas water heaters, and house heating equipment with an hourly input capacity of not less than 25,000 Btu. Gas used in other types of appliances such as refrigerators, incinerators, brooders, incubators, etc. comes under the schedule but the possession of such appliances does not assist in qualification.

Every effort is being made by the companies to secure applications from all qualified consumers by the time the rate goes into effect. Notices and application blanks are going out with all January bills and this direct notification is supplemented by advertising and by personal notification by meter readers, bill deliverers and collectors when possible. As a part of the application each consumer is asked to list the appliances in use, and except in doubtful cases no check will be made prior to its acceptance.



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Copper Pipe Joints

HAYS Double Seals are used wherever copper pipe is used. The Double Seal feature—a 45° seal plus a 90° seal—makes a connection that is gas tight without the use of any sealing agent. Double Seals are approved for Petroleum Products and City Gases by Underwriters' Laboratories. In addition, they have successfully passed the severe tests of many other laboratories.

Tell us your piping problem and we will send complete data on HAYS Double Seals.

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Specify HAYS DOUBLE SEALS

All sizes up to 3,400 cu. ft. capacity

Meters
Diaphragms
Repairs
Provers
Pumps
Calorimeters
Wet Meters
Gauges
Apparatus

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ALL MAKES - ALL SIZES OF METERS

LARGEST GAS COMPANIES NOW USING OUR PARTS

SEND FOR OUR CIRCULAR ON METER REPAIR PARTS

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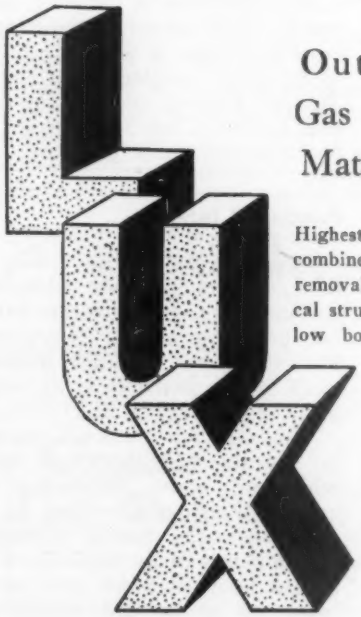

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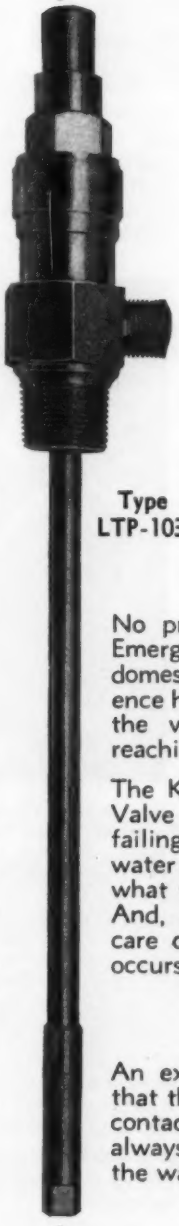

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EMERGENCY RELIEF *Depends Upon...* TEMPERATURE LIMITATION

No pressure relief valve is sufficient Emergency Protection for the tank of a domestic water heater. In fact, experience has proven that for *absolute safety*, the water must be prevented from reaching an excessive temperature.

The Kitson LTP-103 Emergency Relief Valve (Lovekin Patent) operates unfailingly when the temperature of the water reaches 175° or 195°, no matter what the pressure conditions might be. And, of course, this Valve also takes care of the expansion which normally occurs when water is heated.

An exclusive feature of this Valve is that the fusible element is not in actual contact with the water, although it is always in direct thermal contact with the water at the hottest point.

Send for our literature upon the subject of Emergency Relief. It is interesting—and there's no obligation.

KITSON COMPANY

261 No. BROAD ST. PHILADELPHIA PA.

DEVELOPERS—DESIGNERS and MANUFACTURERS of

Kitson Safety Devices (Lovekin Patents) for Domestic Water Heaters | Quality Brass Goods for Gas, Water and All Plumbing Uses.

ESTABLISHED 1897

Regular Structures

Continued from page 27

and stored for future use. Cast iron pits even in permanent locations retain the above advantage when the pit must be installed previous to the permanent surfacing or grading of the roadway. Raising or even changing the location laterally or vertically may be easily accomplished without destruction of the walls.

Where the soil conditions are particularly unsatisfactory, cast iron manholes may be sunk as caissons, thus eliminating the necessity for shoring, expensive lowering of water during construction of forms for concrete or during the pouring of the concrete, and will act as a retaining wall or form during the installation of the pit bottom.

Pit Drainage

Where ground waters never reach a pit bottom and no storm sewers are available into which water from pits may be drained a few follow the practice of omitting a concrete floor. The bottom in this case is usually filled with sand or small gravel to provide a clean floor and one easily changed should cleaning become necessary. The use of cinders for flooring of a pit is not recommended as the dark surface makes it difficult to see objects dropped, the cinders become easily crushed and the dirt readily adheres to shoes, clothing, tools or any other objects set upon the floor.

The preferable policy is to place a cement bottom in all pits to increase safety, cleanliness and ease of working. As a substitute, brick, stone, road surfacing material and wood floors have been used but disadvantages of such practices are plainly evident. No matter what type of flooring is used, the surface of the floor should be graded so that small quantities of water will run to one location from which point the water may be readily removed.

Some companies have found it advantageous to run a pipe line usually three-inches in diameter from the low point in the floor of a pit to a box in the sidewalk or surface of the roadway to facilitate pumping out the pit after water has accumulated.

When the ground water elevation never reaches the floor of the pit, it is a common practice to place a twelve-inch or larger diameter pipe approximately six feet long under the vault, which pipe may or may not be sealed and a pumping pipe run to the surface. The pumping out of such sumps is placed on the regular drip pumper's schedule.

Ladders

Some utilities do not provide permanent ladders in pits but resort to the use of portable ladders where necessary. The nature of gas requires that every possible safety feature be provided. A permanent ladder provides a safer method of exit for a workman who may feel weak from the effects of gas than a portable one which requires steadying for ease in climbing.

Disassembled cast iron manhole. Note wedged edge on bottom of top section of manhole frame. Elevation of top may be altered by changing position of wedge in lugs on bottom section.

Ladders are usually installed at each manhole and are located so that one edge is flush with a sidewall. If space permits, a slight slope of the ladder to place the bottom farther from the wall than the top increases safety.

Wooden ladders are not as satisfactory as steel due to more rapid deterioration, greater space occupied and added fire hazard.

Ladders having both the rungs and sides constructed of ¾″ or 1″ pipes, usually welded and both ends embedded in the walls, will provide a maximum of safety and durability. Spacing the rungs approximately 8″ apart appears to provide a satisfactory step. The greater the rise above 8″, the more awkward become the movements of men entering the pit, especially when encumbered with masks and harness.

Size of Pit

Pit size is dependent upon the space required for the apparatus installed plus the room for installing, servicing and maintaining it. The space necessary for apparatus, whether single or in duplicate, is definite; but the remainder is a matter of judgment. Where a man must work in a sitting or kneeling position an unencumbered space at least three feet square is convenient if not actually necessary. Ample working space need not be provided at every location workmen use, but only at those places most frequently used, such as in front of the regulator valve manhole. By designing the line of the inlet and outlet mains off center with the pit it is often possible to secure more economical use of space.

Constructing pits sufficiently large to install additional regulators in the future is seldom economically justifiable. The reasons were stated in a discussion of regulators. If there are exceptionally strong reasons to indicate a necessity for additional regulators in the same structure in the near future, building one or more sides of concrete block or brick will allow economical enlargement.

It sometimes occurs that more than one regulator becomes necessary in a pit where enlargement of the pit is impractical. In certain cases this has been accomplished by changing the piping and placing one regulator vertically over the other. Another method is to place both regulators as close as possible to the wall, leaving less space between the regulators for workmen than is desirable but still as much as possible under the conditions. Placing one regulator high and the other low on opposite sides has also solved the problem.

Painting of Interior

Painting the walls, ceiling and floor of pits improves illumination and inspires those who enter to maintain general neatness. Neatness will be reflected in a better quality of work if the principle is in evidence in all structures.

The color scheme is seldom white, not because of glare but because white will show discoloring much quicker than darker colors. A light gray has been found satisfactory. White paints easily washed are coming to be used more and more in industrial plants and certain paint manufacturers are willing to give excellent guarantees as to the durability of their products. Most manufacturers have paints which they recommend for concrete or brick walls; but the worst conditions for paint existent in pits should be sub-

Continued on page 72

Barber Gas Pressure Regulators *Eliminate Gas Bill Complaints*

Increasing numbers of Gas Appliance Manufacturers, Gas Companies, Jobbers and Dealers have switched to Barber Regulators because of their exceedingly low pressure drop, compactness, bronze bodies, and precision of operation. Why not write today for complete literature, prices and discounts on the entire Barber line of Burners and Regulators?

Made in ¼", ⅜", ½", ¾", 1", 1¼", 1½" and 2" sizes.

The Barber Gas Burner Co.
3702-4 Superior Avenue
CLEVELAND . . . . . OHIO

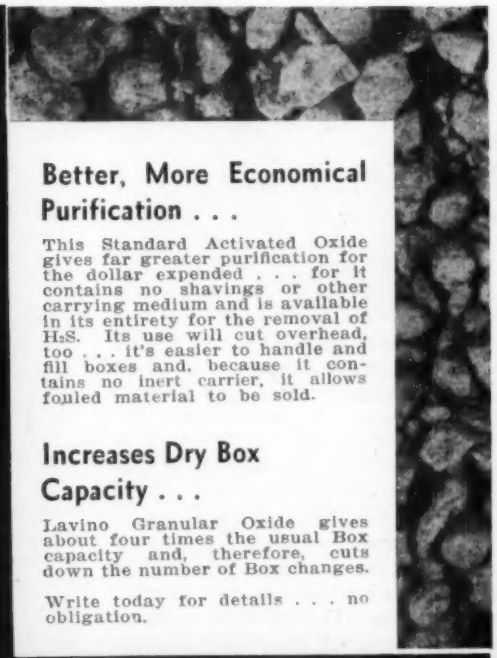
THE GOODMAN STOPPER

The Reliable Shut-Off for Street Mains

Equipped with Improved Patented Locking Sleeve, which locks both handles to the pipe. Stopper cannot slip. Gas cannot pass.

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, New York

LAVINO GRANULAR OXIDE



Better, More Economical Purification . . .

This Standard Activated Oxide gives far greater purification for the dollar expended . . . for it contains no shavings or other carrying medium and is available in its entirety for the removal of H_2S. Its use will cut overhead, too . . . it's easier to handle and fill boxes and, because it contains no inert carrier, it allows fouled material to be sold.

Increases Dry Box Capacity . . .

Lavino Granular Oxide gives about four times the usual Box capacity and, therefore, cuts down the number of Box changes.

Write today for details . . . no obligation.

E. J. LAVINO and COMPANY
1528 Walnut St.
Chicago Philadelphia, Pa. Pittsburgh

USED EQUIPMENT WANTED

A Used Thomas Calorimeter suitable for the measurement and recording of the B. t. u. of gas having a gravity of approximately .54 and a B. t. u. of approximately 360. Address Box 1067, c/o American Gas Journal, 53 Park Place, New York City.

MODERNIZE WITH MOHAWK PRODUCTS

ALL STEEL
MOHAWK HI-SPEED TRAILER
TOOL AND SUPPLY TRAILERS FOR GAS AND ELECTRIC COMPANIES
HOTSTUF BITUMEN HEATERS.
LEAD AND COMPOUND MELTING POTS.
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MOHAWK ASPHALT HEATER CO. 98 WEAVER ST. SCHENECTADY, NEW YORK 100 PARK PLACE, NEW YORK, N.Y.

ISBELL-PORTER COMPANY

Engineers and Contractors for Complete Gas Works

I-P-C

Manufacturers of All Kinds of Gas Apparatus

NEWARK, NEW JERSEY

PURIFYING MATERIAL — BAGGED, OR IN BULK
Manufacturers of GOVERNORS, APPARATUS *and* EQUIPMENT

IRON Connelly Iron Sponge and Governor Co. Elizabeth, N.J. Chicago **SPONGE**

1876 [USE THE BENEFIT of 60 YEARS EXPERIENCE] 1936

Immersion Burners and Their Application to Commercial Uses

(*Continued from page 22*)

An interesting article appeared in the November issue of Food Industries, covering a plant in New York. This plant turned from coal to gas, saving annually $2,000.

Before the plant turned to gas it had to employ a licensed engineer at a minimum of $150. per month. It burned $120. worth of coal monthly, and with $20. per month for ash removal, it made a total of $290. per month. With gas Immersion Heating, it was done for $123.20 per month. This meant a saving of $166.80. per month besides turning out a better product.

In San Francisco, many Immersion Burners are used for peanut cooking. One instance where 400 lbs. of oil is heated with five Immersion Burners. The oil is brought to a temperature of over 300 degrees "F" in approximately one half hour. 100 lbs. of nuts are cooked in 10 minutes. 4 minutes is required to bring the oil back to the desired temperature after charging. The gas consumption is 100 cubic feet of Natural Gas per hour, which would mean just about 200 cubic feet of Manufactured gas.

On the Pacific Coast a lot of crabs are cooked this way. I understand some of these crab cookers are right on the sidewalk evidently to make sales to those passing by the store or whatever type of place it may be.

Potato Chip Cooking with Immersion Burners is becoming more popular. From the few figures I have learned, the figures for gas varies a bit. One seems 8 to 9 feet per pound, another is 7, and I hear of another that was a bit less. Some of these figures may not sound like a big gas saving, but it does result in a saving of oil and better and more uniform products.

Several large Chicago packers adopted Immersion Heating to sausage cooking, not only in their Main Plants, but in their branches.

Our Chicago representative recently wrote that a large apartment house there uses Immersion Burners during the summer months for water heating.

Immersion Heating is not a cure all for all methods of heating, but it is worth considering especially in the matter of heating liquids and materials not requiring temperatures running too high even though it has been successfully used for some substances running up to 700 or 800

There are so many different problems always arising in the industrial gas field that often each concern has its own individual problem and the man in the field must use his own judgment and common sense. I have found, too, that the manufacturer, himself, often knows about what he needs. Some time ago, the ordnance department had not seen or heard of immersion heating. The officer in charge wrote about using it for heating grease for gun barrels. Proper burners were recommended, and they were so pleased they desired to use the same idea for oil heating.

Let us not forget one big field for selling immersion burners. That is to those steam uses for use in the summer months. It means that a big steam plant is not necessary to operate just their tanks whether only one or all. Furthermore, Immersion Heating makes better working conditions during those months.

Another point would be individual control for each tank or appliance. If one tank needs to be hotter than the other, it is easily controlled.

Installation

Before closing, I want to speak again about installing one of these units. When we first sold burners for immersion heating, we did not realize the efficiencies that could be obtained. It was simply attaching a burner to a pipe coil on the first installation. This happened to be with our own local company for their meter shop.

After some research, we found there was a definite amount of gas that could be burned in a given size coil. For instance with our fifty foot burner we use a 2" pipe coil. We also found that for a given size coil, a certain amount of lineal feet was recommended. This cannot always be adhered to right to the inch or even the foot.

Some tanks require more than one coil. It is usually better to use a few coils on long and narrow tanks. It is always advisable to keep the coil off the bottom of the tank a few inches, depending on the size of the coil. Not only is this to allow for sediment to drop below the coil, but to allow for expansion.

Coils can be welded to the tank or attached with suitable lock nuts and packing. Sharp bends in the coils should not be used. It is not advisable to use return bends, rather use two coils.

Because of the tendency of the coil to be of highest temperature in that part surrounding the heating zone, soft or long flames are recommended. These have definite heating characteristics of spreading the heat more uniformly over a greater amount of area of the heating coil.

It is advisable to close the air shutter just enough to take the hardness away from the flame. The short hard flame has a tendency towards spot heat at the flame contact with the coil.

Many installations are made with automatic temperature control because of the wide range of turndown with the atmospheric immersion burner.

Navy Yard to Use Gas Exclusively in Shops

After making a careful study of all factors involved, officials at the Brooklyn Navy Yard have specified gas as the only fuel to be used in two of the new shops now being erected. All equipment to be installed in the shops will be designed to use gas exclusively where heating is required.

The shops involved are the Pipe Shop and the Copper Shop. In the former, gas will be used for all van stoning operations, pipe bending and forging. In the latter, it will be used for annealing, brazing, bending, lead lining and tinning. Heretofore, in about 75 per cent of these operations oil was the fuel used.

In order to assure an adequate supply of gas, Navy Yard officials have asked the Brooklyn Union Gas Co., Brooklyn, N. Y., to lay a new 12-inch high-pressure main, connecting the yard with the large high-pressure main on Flushing Avenue. The new main will be about 1,000 feet in length.

At present it is impossible to estimate the size of the load which will be added to this company's lines through the installation of the gas-using equipment in the two shops. The equipment will require a maximum of 60,000 cubic feet of gas per hour, and the new main will be capable of supplying more than that amount, but at this time no information is available as to how often the maximum load will be required.

The decision to specify gas exclusively was reached only after representatives of the Industrial Division had presented the Navy Yard officials detailed recommendations and a large amount of information showing the superiority of gas for the work to be carried on in the shops. Finally, the approval of the Navy Department in Washington had to be obtained.

Foxboro Contributes An Intermediate Pressure Connection

Referring to a recent article by Mr. H. F. Bean, Physicist of the Bureau of Standards, on "Intermediate Pressures for Orifice Meters used in the Measurement of Gas," it may be of interest to note that as long ago as April 18, 1928, The Foxboro Company, Foxboro, Mass., applied for a basic patent on an Intermediate Pressure Connection for gas orifice meters. This patent was issued on June 13, 1933, as U. S. Patent 1,913,860.

Tests on this device have proved so successful in obtaining accurate measurement under a wide range of conditions that the Company want the entire gas industry to secure the utmost advantage of its use in gas measurement.

With this in mind The Foxboro Company are dedicating the patent to the public in the hope that every one who needs the Intermediate Pressure Connection may use it with the minimum of interference. They have gathered a great deal of information on the application of such intermediate connections for the use of the gas measurement industry, and would be glad to make this material available.

Fisher Governor Co.

Fisher Governor Co ,.Marshalltown, Iowa, recently issued Catalog No. 32A, illustrating and describing their complete line of regulators and automatic controls for the gas industry.

The new catalog also contains complete capacity charts for properly sizing all Fisher regulators, and several pages of technical data, tables and hand book information, which is of special interest to those dealing with the flow gas.

Copy of catalog may be secured by addressing the Fisher Governor Co.

Nordstrom Valve Sales Organization in Session at Oakland Plant

For the purpose of giving members of their sales organization an opportunity to study new developments in valve manufacturing processes, the Merco Nordstrom Valve Company recently arranged for a session of several days at the plant in Oakland, Calif. Under the direction of Colonel W. F. Rockwell, president, a number of the sales staff, comprised of members from various parts of the country, first attended the A.P.I. sessions in Los Angeles, then made an extensive trip through the California oil fields requiring several days, and concluded the tour with a week of study and conferences at the Oakland plant.

Several late developments in the manufacture of Nordstrom Lubricated Valves were demonstrated to the visiting members. Extensive plans were made for widening the distribution of the company's valves during 1936.

During the conferences in Oakland, members of the organization were hosts to a large number of oil and gas company officials who attended the A.P.I. sessions in Los Angeles and made it a point to visit the Oakland plant to observe the improved methods of manufacturing valves.

New Brown Air Operated Controller

The Brown Instrument Co., Philadelphia, Pa., recently issued a folder titled "Tune in for Lower Process Costs," in which is disclosed the new Brown Air-o-Line Controller. It is designed to meet the most exacting process control problems found in industry for measurement and control of temperatures, pressures, flow and liquid levels.

In process control where fluctuations either high or low mean a loss—the temperature or other condition it is desired to control must be kept exactly "on the mark" when positive results are desired.

The use of graduated throttling range and automatic reset dials in the Brown Air-o-Line is a development in air operated controllers which assures accurate measurement and precise control—because they provide an exact means of "Tuning In" to specific process characteristics, without interruption to automatic control.

Copy of folder will be mailed on request to company.

Floating Agitators Installed at Steubenville, Ohio

In order to bring up to date and increase the efficiency of five obsolete, hand-poked gas producers in its Steubenville plant, the Wheeling Steel Corporation has installed five Chapman floating agitators, manufactured by The Cooper-Bessemer Corp., Mt. Vernon, Ohio.

The floating agitators are continuous stirring devices that convert wasteful, hand-operated gas producers to semi-mechanical feed. They have two functions: (1) to feed the coal into the producer and distribute it evenly over the fire bed; (2) to stir the fire bed and keep it leveled off, preventing blow holes.

The Wheeling Steel Corporation anticipates four direct results from the installation of the agitators: increased heating value of the gas produced; less waste of gas because of uniform feed and fire bed; considerably less attention required; increased producer capacity and consequent increased furnace capacity.

"Klixon" Pressure Switches

Spencer Thermostat Co., Attleboro, Mass., recently issued a bulletin describing their newest item—the Klixon PS pressure switches.

These switches are snap-acting, operated by pressure, adjustable both as to cut-in setting and differential. They are positive safety limiting controls such as are widely used with all types of automatic heating equipment fired by oil, gas, coal, coke, etc. Furthermore, there are many

uses in the industrial field for control of air, gas, water, oil or any medium not injurious to bronze.

The operation of the switches is simple: Motion resulting from pressure exerted on the bellows is transmitted directly to the Klixon Disc actuating the contacts with a positive snap-action. Bellows, disc, and contacts are enclosed and protected by the bottom case.

These are available in two-wire or three-wire types to accommodate all commonly used circuits for either low-voltage or full line-voltage service. Their cut-in pressure and differential ranges cover the majority of all low-pressure heating applications. Bulletin will be sent on request.

Gas Executive Tells His Story

Uncle Sam has had some of his experts lecturing in Louisville, Ky., and telling the folks what a wonderful saving it would be when the T.V.A. was supplying Louisville with electricity from that hydro-electric plant. Now comes T. B. Wilson, president of the Louisville Gas & Electric Company who says, quoting the Washington speaker, that the cost for lights, refrigeration, washing machines, vacuum, toaster, iron, cooking electrically would cost $5 per month, under T.V.A. rates, whereas right now consumers in Louisville using a combination gas-electric service can do all mentioned for $3.98 per month. Using "yardstick" rates for comparison, the average electrically equipped home would use 500 kilowatt hours per month and pay under T.V.A. rates $6.90 where in effect here, where the combination is used, the consumption would be 75 kilowatts and 3,250 cubic feet of gas costing only $4.98 or $1.92 less and these figures include direct taxes the company pays for all purposes. The cost to operate an electric range and an electric water heater in the average home under proposed T.V.A. rates is $4.90 per month. The same appliances with gas operation in Louisville homes is $1.93 per month. There are 74,262 gas ranges and 43,816 gas water heaters in Louisville.

What About the Collection Department Record and Procedure?

Continued from page 16

days after the original notice has been sent this file is checked with the customer's ledger record, and if the account has been paid the follow-up forms are destroyed. If, however, the account remains unpaid the collector's follow-up copy with cashier's stub and customer's receipt attached are given to the collector and the Collection Department's follow-up copy is placed in the file as a control on all work turned over to the outside collector.

Making Collections

If the collector is successful in making the collection, he merely signs his name and enters the date in the spaces provided for this purpose which carbons through on both stubs. The customer's receipt is then detached and handed to the customer. When he returns to the office the cashier's stubs are detached and turned over to the cashier with the money actually collected and the collector's follow-up copy is returned to the Collection Department Record Clerk as a report of the day's work, and also for the purpose of clearing the file of the follow-up copies.

Getting Promise of Payment

If the collector merely receives a promise of payment or the promise of a series of payments, this is recorded on the back of the collector's follow-up copy which is then signed by the customer. This results in the customer taking a promise more seriously and insures a very substantial percentage of promises being kept. When these are returned to the office a notation is made on the collection department follow-up copy and the collector's set of forms are placed in a tickler file to insure immediate follow-up on all unredeemed promises.

If the customer calls at the office to make the payment the collector's set of forms are removed from the follow-up file and used in exactly the same manner as though the collector had received the money while on the customer's premises.

Non-Payment Cut-Off

If the collector is unable to secure either the cash or a satisfactory promise and the condition of the account justifies a cut-off for non-payment his follow-up copy is used as the authority to discontinue service. He enters the number of the meter and the reading; the date disconnected and the manner of disconnection together with his name. These copies are then placed in a temporary cut-off file by date for a period of five days because practically all accounts will be paid within this period. A permanent turn-off order is issued on all accounts that remain unpaid at the end of that period. This eliminates a large amount of detailed clerical work and reduces the possibility of error.

IN CONSIDERATION OF MY SERVICE BEING CONTINUED, I AGREE TO MAKE PAYMENTS ON MY ACCOUNT AT THE COMPANY'S OFFICE ON THE DATES AND IN THE AMOUNTS LISTED BELOW

IT IS UNDERSTOOD THAT IF I FAIL TO MAKE THESE PAYMENTS MY SERVICE MAY BE DISCONTINUED WITHOUT FURTHER NOTICE.

PAYMENTS PROMISED		PAYMENTS MADE		REMARKS
DATE	AMOUNT	DATE	AMOUNT	

SIGNATURE

Fig. 4. This shows the reverse side of the collector's follow-up copy which is used for recording promises made by the customer and which is then signed by the customer.

Complete Set of Forms At One Writing

Whenever an account which has been disconnected for non-payment is paid the Collection Department's follow-up copy is released and used as the reconnect order because it has entirely served its purpose for follow-up activities by that time.

The procedure as described provides all of the forms and records necessary to complete the entire collection procedure and eliminates all the writing and transcribing of the information. The collector is relieved of all clerical work which consequently effects a substantial increase in the number of calls made per day which in turn reduces the average cost per call.

The method outlined provides sufficient flexibility so that it may be adapted to any local condition.

Getting the Most Out of Your Window Display Dollar

Continued from page 54

competitor gets through playing up his other facts and advantages, the cost angle is left "dangling in the closet," always present to pop up and give the whole story away. A series of planned gas water heating window displays, on the proven low cost of gas, is a swell way to present the true story to the public. It is only by repetition that we are able to overcome this adverse publicity. Window displays will do it, if you give them a chance.

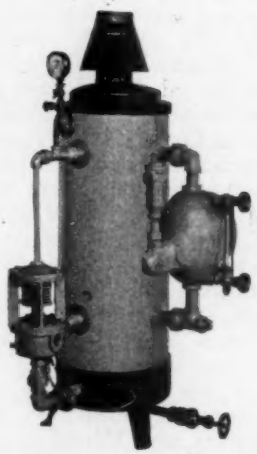
Regulator Structure

(Continued from page 68)

mitted to a paint manufacturer before using what may appear from advertisements to be a satisfactory product.

The painting of floors facilitates removal of oil or greases which otherwise gradually impregnate the floor.

Pressing Machine and Steam Iron— BOILERS



P. M. LATTNER MFG. COMPANY
CEDAR RAPIDS, IOWA

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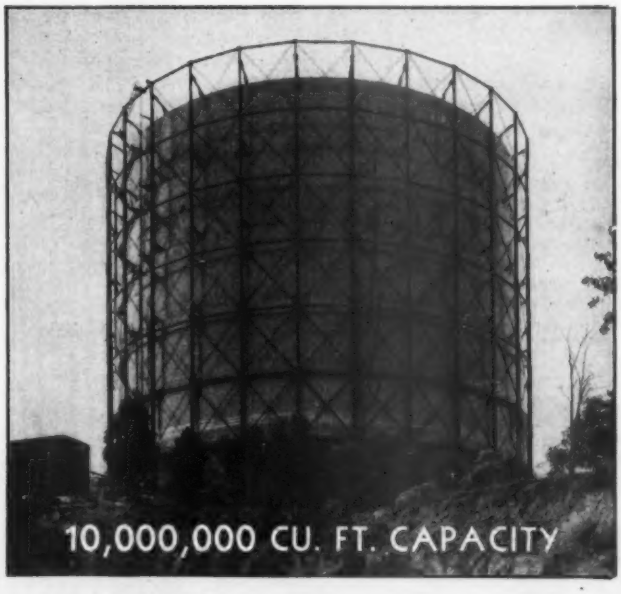

HIGH PRESSURE GAS HOLDERS LOW PRESSURE

PURIFIERS · TANKS · CONDENSERS
STEEL PLATE CONSTRUCTION

INTEGRITY GOOD WORKMANSHIP FAIR DEALING

CRUSE-KEMPER CO.
AMBLER, PA.

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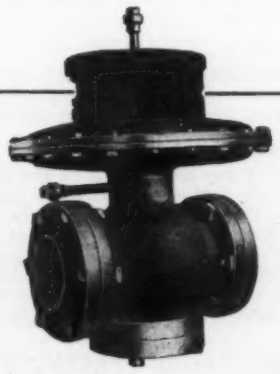
Dead-Weight Regulator



Pressures as low as two ounces without variation

A UNIFORM delivery pressure anywhere between 2 and 6 ounces as desired can be maintained with either natural or manufactured gas taken at any inlet pressure up to 15 pounds, by use of the Fulton Dead-Weight Regulator. Pressure will be unvarying throughout the whole range of flow. This regulator has no stuffing boxes, is highly sensitive as a result, and can be used either as a district governor or for individual service. Ideal for regulating gas pressures to gas engines. Sizes 3 inches and over have flanged connections, those below 3 inches, screw connections. For relieving line pressures below 6 ounces, the Fulton Dead-Weight Relief Valve is recommended. Ask for Bulletin 1629, also new general C-F Catalog.

THE CHAPLIN-FULTON MFG. CO.
28-40 Penn Avenue, Pittsburgh, Pa.

Objective Rate Plan Adopted

A NEW rate structure designed to stimulate increased use of natural gas by residential consumers has been put into effect by the Mobile Gas Service Company, serving Anniston, Gadsden, Montgomery, Selma, and Tuscaloosa. The new rates are similar to those which electric utilities have found useful in boosting the sale of refrigerators, water heaters, space heaters and other appliances and their more liberal use in the home.

The new rate plan as approved by the public service commission follows:

Available as a low-cost rate plan to any consmer using the Company's natural gas service in a residence only.

RATES

PRESENT RATE

	Net	Gross
For the first 300 cubic feet or less used per month	$1.25	$1.35
For the next 2,700 cubic feet per month per 1,000 cubic feet	1.25	1.35
For the next 17,000 cubic feet per month per 1,000 cubic feet	.65	.75
All over 20,000 cubic feet per month per 1,000 cubic feet	.60	.70

INDUCEMENT RATE

The Inducement Rate is available to residential customers using service under the residential rate schedule and consuming more gas during the current month than during the corresponding month of the year ended December 31, 1935, or as herein otherwise provided. Such additional gas used will be billed at 60c per thousand cubic feet. The Inducement Rate applies only to gas service used in excess of the base use hereinafter defined.

OBJECTIVE RATE

	Net	Gross
For the first 300 cubic feet used per month	$1.25	$1.35
For the next 2,700 cubic feet per month per 1,000 cubic feet	1.00	1.10
For the next 17,000 cubic feet per month per 1,000 cubic feet	.60	.70
All over 20,000 cubic feet per month per 1,000 cubic feet	.55	.65

MINIMUM MONTHLY CHARGE	Net	Gross
The minimum monthly charge on all the above rates shall be	$1.25	$1.35

PROMPT PAYMENT DISCOUNT

The difference between the net and gross rates stated above shall constitute the discount for payment within ten days of date of bill. No discount applies to the excess gas billed under the Inducement Rate.

SPECIAL TERMS AND CONDITIONS

1. The Base Use for any month will be the number of cubic feet of gas used under the residential rate during the corresponding month of the period January 1, 1935, to December 31, 1935. In no case shall the Base Use be less than 300 cubic feet.
2. No Base Use will be established on less than one full billing month's service.
3. New customers will be billed upon the present residential rates for a period of one year from date of connection in order to establish the base use under this plan. New customers are defined as customers who were not using gas for the billing period ended December 31, 1935, and who are connected after December 31, 1935.

MAXIMUM LIMIT UNDER PRESENT RATE

When a customer's monthly bill on the Present Rate or on the present rate in combination with the Inducement Rate exceeds the charge for ten (10) thousand cubic feet under the Objective Rate, billing will be made according to the Objective Rate subject to a minimum monthly charge equal to the charge for ten (10) thousand cubic feet under the Objective Rate.

APPLICATION OF OBJECTIVE RATE

When a customer's increase in use of service in any month is such that the bill under the "Inducement Rate" plan equals or is less than the charge for the same number of cubic feet of gas when billed on this Objective Rate, the bill will be computed on the Objective Rate.

When 80% or more of the total residential customers being served by the Alabama Utilities Service Company and the Mobile Gas Service Corporation have increased their use of service to the point where they have been billed on the Objective Rate for six consecutive months, then the Objective Rate is to become the residential rate of the Company, applicable to all residential customers, regardless of their consumption. The Objective Rate will become the residential rate beginning with the first billing period after the six months period specified above, and the Present Rate and Inducement Rate will no longer apply.

HEATING STANDARDS

The above rates are based on the maintenance of an average heat unit standard of 960 B. T. U. per cubic foot of gas determined as set out in Alabama Public Service Commission's General Order No. 14 and subject to allowable variance as stated in said order.

CONVENTION CALENDAR

February

6- 8 Eastern Natural Gas Sales Conference, William Penn Hotel, Pittsburgh, Pa. Geo. L. Scofield, Republic Light Heat and Power Co., Buffalo, N. Y., Chairman.

13-14 New England Gas Association, annual meeting, Boston, Mass.

13-15 Mid-West Regional Gas Sales Conference, Sherman Hotel, Chicago, Ill. H. J. Dropp, Milwaukee Gas Light Company, Milwaukee, Wis., Chairman.

19-21 Southern-Southwestern Regional Gas Sales Conference. Roosevelt Hotel, New Orleans, La. C. B. Wilson, Little Rock Gas and Fuel Co., Little Rock, Ark., Chairman.

March

2- 6 Regional and Group Meetings of A.S.T.M., Pittsburgh, Pa.

10-11 A. G. A. Industrial Gas Section, Industrial Gas Sales Conference, Detroit, Mich.

April

2- New Jersey Gas Association, Berkeley Carteret Hotel, Asbury Park, N. J.

6- 7 A. G. A. Distribution Conference, Memphis, Tenn.

13-15 Mid-West Gas Association, 31st annual conference, Minneapolis, Minn. R. B. Searing, Secy., 302 Utilities Building, Sioux City, Iowa.

29-May 1st Missouri Association of Public Utilities, annual convention, Jefferson Hotel, St. Louis, Mo. Jesse Blythe, Asst. Secy., 101 West High St., Jefferson City, Mo.

May

5-7 Pennsylvania Gas Association, Lodge of Sky Top, Pa.

5- 8 Natural Gas Department, American Gas Association, Annual Meeting, Dallas, Texas, A. E. Higgins, secretary, 709 Dallas Gas Building, Dallas, Tex.

July

8-10 29th Annual Meeting Canadian Gas Association and Northwest Conference Pacific Coast Gas Association, Hotel Vancouver, Vancouver, B. C., Canada.

October

Week of October 26th American Gas Association, 18th annual convention, Atlantic City, N. J. Alexander Forward, managing director, 420 Lexington Ave., New York N. Y.

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A very fine gas coal—inherently one of the best. It is processed in plants, mechanically operated, to meet exacting requirements in which a high yield of rich gas is of paramount importance—clean and free of impurities.

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